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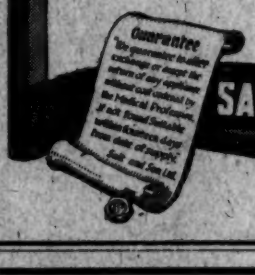

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LONDON SATURDAY OCTOBER 11 1947

PENICILLIN IN NEUROSYPHILIS*

BY

C. WORSTER-DROUGHT, M.A., M.D., F.R.C.P.

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General Observations

Penicillin, introduced into therapeutics in 1941, was at first restricted to the treatment of certain specified infections. This limitation was by Government direction, and was mainly due to the necessity for conserving the somewhat scanty supplies. It is only within the last year that penicillin has become available for more general use, and especially for experimental therapeutics. Nevertheless, penicillin already has an established place in the treatment of neurosyphilis. It was recognized quite early that the substance had a definite antispirochaetal action, and in 1943 Mahoney, Arnold, and Harris published the results of treating a series of cases of early syphilis with penicillin. From these and the subsequent observations of other workers it became apparent that the immediate results of treatment with penicillin in early syphilis equalled if they did not exceed those obtained with intensive arsenical and bismuth therapy. Further, there was the added advantage that with penicillin there was little or no risk of toxic reactions. Subsequently, rapid improvement in both the clinical condition and the cerebrospinal fluid changes in various forms of late syphilis was reported.

From the follow-up of cases of early syphilis treated with penicillin alone, however, it became apparent that a moderately high rate of relapse occurred. In addition, it was noted that the percentage of cases relapsing was roughly inversely proportional to the total dosage of penicillin given; in the earlier cases treated this had no doubt been inadequate. These observations finally determined what was considered an optimal total dosage expressed in so many Oxford (now international) units. By June, 1944, penicillin was adopted as the "drug of choice" for the treatment of early syphilis in the U.S. Army in Europe, and, in the autumn of 1944, in the Royal Navy, R.A.F., and the British Army. The standard course was fixed at a total dosage of 2,400,000 units given in doses of 40,000 units every three hours, day and night (60 injections), over a period of seven and a half days. Even with this dosage the average relapse rate in early syphilis appears to have been as high as 15% in some series of cases (Marshall, 1946; King, 1946), while others report an 8% (Marshall, 1946) and 7% (Moore, 1945) relapse rate.

Dosage and Methods of Administration

Most of the present-day experiences of penicillin in neurosyphilis are based on the results of a dosage and a frequency of administration similar to those of the standard course referred to above. From subsequent variations of dosage, however, it is clear that we still have much to learn in order to evolve the most satisfactory method of applying penicillin, especially in the treatment of neurosyphilis.

Many authorities have considered it advisable, if not essential, that the concentration of penicillin in the blood should be kept at as high a continuous level as possible throughout the period of treatment. It was found that penicillin disappeared from the blood after four hours from the time of injection. The level of penicillin in the blood therefore could be kept up either by a continuous drip technique or by an intravenous, intramuscular, or subcutaneous injection given every three hours, the average period of treatment required to reach an adequate total dosage being seven and a half to eight days.

Intravenous penicillin therapy has little to commend it. The continuous drip technique is inconvenient, troublesome, and needs special apparatus, while even with repeated single intravenous injections there is a risk of thrombophlebitis (Kolodny and Denhoff, 1946). On the other hand, three-hourly intramuscular injections of penicillin in adequate doses yield equally good if not better clinical results than those following intravenous treatment. Thus, according to Mahoney and his co-workers (1944), relapse was more frequent after penicillin treatment given by intravenous injection (including continuous intravenous drip) than by repeated intramuscular injection.

The recent tendency is towards the administration of a somewhat larger total dosage of penicillin in neurosyphilis. Several authors (e.g., Olansky and Chinn, 1946; Marshall, 1946) advocate a total dosage of 4,000,000 units given in repeated intramuscular doses of 40,000 units every three hours.

Some authors consider that it may not be necessary to keep a measurable level of penicillin in the blood constantly throughout the period of treatment, but that equally good therapeutic effects might be obtained by administering much larger doses at considerably longer intervals—for example, twenty-four hours—until an adequate total dosage is reached. Thus Lloyd-Jones and Maitland (1945) state that single doses of from 300,000 to 500,000 units given daily for eight to fourteen days yield equivalent therapeutic results to those following the usual standard course—namely, 60 injections of 40,000 units given every three hours—although no trace of penicillin can be detected in the blood twelve hours after the massive injection.

I have treated some cases of meningovascular neurosyphilis by this method, giving a daily dose of 500,000 units of penicillin intramuscularly for 14 days, and agree that the immediate clinical response is good. It is far too early,

*The opening paper read at a joint discussion between La Société de Névrologie de Paris and the Section of Neurology, Royal Society of Medicine, on April 15, 1947.

however, to judge the ultimate results; should these prove satisfactory when cases have been followed up for sufficiently long periods, the problem of treating cases of chronic neurosyphilis in out-patient departments, instead of admitting them to hospital as at present, would largely be solved. If it is eventually shown that a continuous and fairly constant level of penicillin in the blood is really necessary for full therapeutic effects, the preparations of penicillin in oil and beeswax may prove valuable—for example, injectio penicillin. oleosa, *B.P.*

I have invariably used sodium penicillin in watery solution for injection by all routes and have no personal experience of oil–wax preparations. Harrison (1946), who has been using these preparations, states that after a deep subcutaneous injection of 300,000 units in oil–wax, penicillin can be found in the blood serum for 12 to 16 hours but not at the end of 24 hours. Similarly, Kirby, Leifer, and their co-workers (1946) found that an injection of 300,000 units of highly purified calcium penicillin (of potency 1,000 units per mg. in 1 ml. of peanut oil with 4.8% of beeswax) given by subcutaneous injection maintains an assayable blood level of penicillin for 20 hours. Thus patients can be treated with one injection daily of 300,000 units in oil–wax for 10 to 14 days (total dosage of 3,000,000 to 4,200,000 units). From these observations it would appear that, if the maintenance of a fairly constant concentration of penicillin in the blood throughout the period of treatment proves to be necessary, the use of oil–wax preparations is the method of choice for daily injection in out-patient cases of neurosyphilis. If such a continuous level in the blood should not be necessary, however, then watery or saline solutions of penicillin are preferable, for I am aware that examples of persistence of the oily preparation in the tissues (non-absorption) have been reported, and occasionally a localized and tender induration appears three days after injection of the oil–wax penicillin (Pillsbury, 1945).

Penicillin Combined with Arsenicals and Bismuth

In view of the percentage of relapses reported in cases even of early syphilis treated with penicillin alone, and in spite of the initial beneficial effects following penicillin treatment, I have at no time abandoned the use of arsenicals and bismuth—in conjunction with penicillin—in treating cases of neurosyphilis. It is of interest to note that many authors (e.g., Marshall, 1946; McElligott, 1946; Olansky and Chinn, 1946) advocate the combined use of penicillin, arsenicals, and bismuth not only in neurosyphilis but also in early syphilis. It is even possible that a synergistic action exists between the two types of treatment as indicated by the animal experiments of Eagle and his co-workers (1946) and the observations of Levaditi and Vaisman (1946).

Using the standard course of penicillin administered parenterally, the most appropriate method of applying the combined treatment is to give three injections of arsenic and bismuth during the week of penicillin treatment in order to utilize the possible synergistic action (in doses of 0.3 g. of neoarsphenamine and 0.2 g. of bismuth). The course of penicillin is then followed up by 12 injections of an arsenical—0.45 g. of neoarsphenamine or 0.06 g. of "mapharsen" ("mapharside")—and bismuth (0.2 g.) at weekly intervals. Some observers prefer to give the arsenical and bismuth every four days for forty days—10 injections of each substance—using 0.45 g. of neoarsphenamine, 0.06 g. of mapharsen, or 0.09 g. of "neohalarsen," given intravenously, and 0.2 g. of bismuth intramuscularly (McElligott, 1946).

It will not be possible fully to assess the final results of penicillin treatment—even when combined with the older methods—for several years. A careful and prolonged follow-up of cases is imperative. We can only wait and ascertain what proportion of the thousands of cases of early syphilis treated with penicillin alone in the British and U.S. Forces will eventually relapse or develop some form of neurosyphilis. Consequently, as a result of further observations, it may be necessary to amplify, extend, or otherwise alter the schemes of treatment at present in use.

Intrathecal Administration of Penicillin

However advisable in acute meningeal infections such as streptococcal and pneumococcal meningitis, is the intrathecal injection of penicillin either indicated or advisable in neurosyphilis—or can equally good therapeutic results be obtained by parenteral injection alone?

The evidence as to whether penicillin given by parenteral injection is able to penetrate the blood–brain barrier (choroid plexus) into the subarachnoid space has been somewhat contradictory. Thus it is stated that penicillin injected parenterally in standard doses does not reach the cerebrospinal fluid in demonstrable quantities (Marshall, 1946). McDermott and Nelson (1945) found only traces of penicillin in the cerebrospinal fluid after the intramuscular injection of a single dose of 300,000 units or over (which produced a blood concentration of penicillin of 10 units or more per ml.). On the other hand, Schwemlein and his co-workers (1946) claim that penicillin injected parenterally reaches the cerebrospinal fluid in adequate amounts. There is more recent evidence that massive single doses of penicillin—for example, 600,000 units given every hour—may penetrate the blood–brain barrier in larger quantities (Lourie *et al.*, 1945; Lloyd-Jones, Allen, and Donaldson, 1946; Schwemlein *et al.*, 1946).

It is considered by some observers (e.g., Rosenberg and Sylvester, 1944; Dickson Wright, 1946) that if the choroid plexus is damaged by inflammation—for instance, in meningitis—penicillin may reach the cerebrospinal fluid in somewhat larger quantities than normally.

Is it necessary for penicillin to pass the blood–brain barrier in order to exert an adequate therapeutic effect in neurosyphilis (including parenchymatous neurosyphilis)? My answer is "No," since adequate clinical response, with rapid reduction in cell and protein content of the cerebrospinal fluid towards normal, is obtainable in most, if not all, cases of meningovascular neurosyphilis treated by parenteral injections of penicillin; and, further, in forms of parenchymatous neurosyphilis (general paresis and tabes dorsalis) considerable improvement in the pathological cell content and total protein of the cerebrospinal fluid is observed in many cases—as well as a slower decrease in the intensity of the serological reactions. Consequently, whether or not penicillin passes the blood–brain barrier in "adequate" amounts, it is certainly capable of exerting considerable effect on the meninges and central nervous system when given by parenteral injection. In view of these facts it is probable that the reaction between the infecting organism and the antibiotic takes place mainly in the leptomeninges, these membranes being well supplied with blood vessels. In my earlier cases of neurosyphilis treated with penicillin I used the intrathecal route, giving 10,000 units in 10 ml. of normal saline by lumbar puncture every day for eight to ten days, at the same time administering the usual standard penicillin treatment by intramuscular injection (40,000 units every three hours for seven and a half to eight days). I was fortunate in meeting with no excessively severe reactions—as judged by certain published reports, to which I will refer later—but there is often a brisk meningeal reaction accompanied by some pyrexia and generalized pain after the first intrathecal injection. The cerebrospinal fluid drawn off by lumbar puncture on

the following day will be found to contain a larger number of cells (varying from 500 to 10,000 per c.mm. and including a high percentage of polymorphs) and an increased total protein of from 80 to 250 mg. per 100 ml. The pleocytosis persists, but with diminishing intensity, throughout the course of intrathecal penicillin. In tabes dorsalis the initial intrathecal injections may provoke a severe attack of "lightning pains."

As a result of further observation and experience with parenteral injections I have now abandoned routine intrathecal injection of penicillin in neurosyphilis, preferring intramuscular injection in adequate dosage, except for certain cases of tabes dorsalis with severe and frequent "lightning pains."

If intrathecal injection is decided upon it is best to give 10,000 units of penicillin in 10 ml. of saline daily by lumbar puncture, more than this quantity of cerebrospinal fluid having been drawn off, and to repeat the injection for seven to ten days. (In acute streptococcal and pneumococcal meningitis intrathecal penicillin may be necessary at intervals of 12 hours for the first three or four days.) It has been shown (Cairns *et al.*, 1944) that a single intrathecal dose of 4,000 units maintains an adequate level of penicillin in the cerebrospinal fluid for 24 hours. Penicillin appears in the lumbar cerebrospinal fluid after an intraventricular injection, and administration by lumbar puncture gives rise to a substantial concentration in the cerebrospinal fluid bathing the brain and even in the ventricular fluid. Cooke and Goldring (1945), however, advance the view that the presence of large amounts of penicillin in the cerebrospinal fluid after lumbar intrathecal injection suggests stasis to be the reason for such high concentration, whereas the presence of large amounts of penicillin in the intraventricular fluid suggests that the blood stream may be the source of the penicillin, as the direction of the flow of the cerebrospinal fluid is from the ventricles to the subarachnoid space.

The introduction of penicillin by cisternal puncture in neurosyphilis seems to be not only inadvisable but hazardous according to the results of Neymann, Heilbrunn, and Youmans (1945). These authors report muscular twitchings and generalized convulsions in cases of general paresis, as well as two deaths from what they term "chronic penicillin encephalopathy" following the injection of penicillin by the cisternal route. Lesions of the cauda equina following the injection of penicillin by lumbar puncture have been described, and convulsions have resulted from intraventricular injections (Smith, Duthie, and Cairns, 1946). Also, the American *Year Book of Neurology and Psychiatry*, 1946, refers to motor weakness, optic atrophy, bladder incontinence, neuroradiculitis, mental abnormalities, and cerebral atrophy occurring after the intrathecal and intraventricular administration of penicillin (Siegal, 1945; Walker and Johnson, 1945; Sweet, Stanley, *et al.*, 1945). Some of these effects may have been due to impurities in the penicillin used, as earlier preparations of penicillin issued were considerably less pure than those now available.

Therapeutic Reactions

All observers testify to the relative harmlessness of penicillin compared with its unexampled destructive effect on many bacteria. By rapid intravenous injection the penicillin concentration of the blood can be forced up to a level 1,000 times greater than is necessary to produce therapeutic effects without untoward incident (Fleming, Young, Suchet, and Rowe, 1944). Even in early syphilis, however, some 50% of cases treated with penicillin experience varying degrees of malaise and usually slight pyrexia after the initial doses (McElligott, 1946). A few individuals may be sensitive to some constituent of the penicillin. Generalized urticaria, with or without constitutional disturbance, has occasionally been observed one week or so after the first injection, but it is not an indication for discontinuing treatment (Pillsbury, 1945). Only very few instances of more severe systemic reactions, including profound malaise, continued pyrexia, and toxicodermal reactions, have been reported (Kolodny and Denhoff, 1946). There is no recorded instance of any damaging effect on bone marrow, liver, or other organs. With the more recent, and purer, preparations of penicillin such reactions are less frequent; consequently, the earlier reactions recorded were probably due to impurities. Calcium penicillin is said to be six times more toxic than sodium penicillin, but even this is negligible, as the lethal dose in a man weighing 60 kg. would seem to be over 10,000,000 units (Welch, Chandler, Davis, and Price, 1945).

Herxheimer-Jarisch reactions have been reported from time to time in cases of neurosyphilis in addition to other forms of late syphilis, as well as in early syphilis, treated by penicillin alone. Personally, I have observed no more than a pyrexial reaction following the first or second dose of penicillin (given intramuscularly), and very occasionally some discomfort in the legs with temporarily increased spasticity in cases of meningomyelitis. To judge from some of the published reports, however, it would seem that I have been fortunate, as various forms of exacerbation of symptoms, including thrombosis, have been observed, and even acute transverse myelitis (McElligott, 1946). In view of the possibility of Herxheimer-Jarisch reactions following penicillin injection, however, I now prefer to give six injections of bismuth (0.5 ml. of "bismostab") every four days in meningovascular neurosyphilis, and four injections of bismuth at the same intervals in parenchymatous neurosyphilis, before proceeding with the full course of penicillin.

Meningovascular Neurosyphilis

There is abundant evidence that penicillin—in adequate dosage and administered by whatever route—has a striking initial beneficial effect on all forms of meningovascular neurosyphilis, especially acute forms. The therapeutic effect is observed not only in the tendency to subsidence of clinical symptoms but more particularly in the rapid improvement in pathological cerebrospinal fluids. The pleocytosis and the increased protein content will often show a noteworthy decrease within a few days of starting treatment and reach a normal level within two to four weeks. The intensity of the Wassermann reaction (and other serological reactions) in the cerebrospinal fluid gradually decreases and may become negative within two to four months. These results suggest an actual selective action of penicillin on pathological cerebrospinal fluids or meninges, as there is no parallel decrease in the serological reactions of the blood. The blood Wassermann reaction may continue positive for many months, and even indefinitely, after treatment limited to penicillin.

The clinical response of syphilitic meningitis to penicillin (by parenteral injection) is usually immediate and dramatic. In acute forms of the disorder headache and neck rigidity may disappear within 48 to 56 hours, and the increased cell and total protein content of the cerebrospinal fluid rapidly reaches a normal level. The serological response, as stated previously, is somewhat slower. Cranial nerve palsies improve gradually and usually recover. Nelson and Duncan (1944) mention five cases of syphilitic meningitis with cranial nerve palsies, all of which made a good recovery with penicillin treatment, the cranial nerve lesions disappearing completely in four cases. In the remaining case some residual weakness was still present after 98 days.

From the observations of Stokes and his co-workers (1944 to 1946) it is doubtful if any further change towards improvement occurs after four months from the termination of penicillin treatment. Consequently these authors have thought it advisable to repeat the course of penicillin after this four-month interval. At the time of reporting, however, they had noted no conspicuous benefit as a result of repeating the course. Repetition is advocated by other observers . for example, two courses of penicillin of a total dosage of 2,400,000 units at a week's interval (Marshall, 1946) and the usual course of penicillin at intervals of three weeks for two or more courses (McElligott, 1946). Further time must elapse before the value of such repeated courses can be finally assessed.

As stated previously, in most cases of neurosyphilis (especially parenchymatous forms) the serological reactions in the blood—particularly the Wassermann reaction—are little affected by penicillin treatment and will often continue to show positive results long after the cerebrospinal fluid has become normal. This observation may furnish a further argument for following up the course of penicillin with arsenical–bismuth therapy; also relapse may occur in a cerebrospinal fluid that has become normal as a result of penicillin treatment although a return to the original pre-treatment severity is unusual.

Parenchymatous Neurosyphilis

Even in parenchymatous forms of neurosyphilis, such as general paresis (G.P.I.), the initial effect of penicillin treatment—injected by whatever route—on the symptomatology (usually) and upon the cerebrospinal fluid changes is remarkably good. In cases of early general paresis treated with penicillin alone I have seen the cell and protein content of the cerebrospinal fluid become normal within four weeks, and even a strongly positive Wassermann reaction becomes negative within two months; the blood Wassermann reaction continued strongly positive. Six months later, however, the Wassermann reaction in the cerebrospinal fluid may be found weakly positive, the blood Wassermann reaction still remaining strongly positive. These later results determined me to combine penicillin treatment with the usual course of fever therapy—for example, malaria, 10–12 rigors—in all cases of general paresis; and in tabes dorsalis to follow up the penicillin treatment with full arsenical and bismuth therapy.

(a) General Paresis

Some authors claim definite clinical improvement in cases of general paresis treated by penicillin alone. As judged by the literature, however, most observers now use penicillin in combination with either the usual arsenicals, "tryparsamide," bismuth, or some form of pyrexial therapy for the treatment of this condition. The results reported are somewhat conflicting. All observers agree, however, that even when penicillin alone is used some improvement occurs in the pathological state of the cerebrospinal fluid in fully 60% of cases. This improvement is not sufficient to guarantee permanent benefit (confirmed by my own experiences); also, it has to be remembered that similar improvement in the cerebrospinal fluid in cases of general paresis may result from initial treatment with arsenical preparations, only to be followed by relapse at a later stage. So far as I am aware no case of general paresis has been reported to have become serologically negative in both cerebrospinal fluid and blood, with the maintenance of clinical improvement, on penicillin treatment alone. The best results appear to have been obtained in those cases treated with penicillin in combination with some form of pyrexial therapy (Goldman, 1945). Some clinicians have used a total dosage of 3,000,000 units of penicillin in conjunction with only "half the usual amount of fever therapy." Rose and his co-workers (1946), for instance, report 49 cases of general paresis receiving this form of treatment: 25 improved, 21 showed no change, and 3 became worse.

In cases of general paresis treated with full malarial or fever therapy, whether or not followed by courses of arsenical and bismuth injections, the positive serological reactions in blood and cerebrospinal fluid take two to four years to become negative. The addition of an initial course of penicillin to therapeutic malaria certainly appears to hasten the reversal of the positive serological reactions, especially in the cerebrospinal fluid.

From my personal experiences the scheme I would advocate for the treatment of general paresis is as follows:

After four initial injections of bismuth—for example, bismostab 0.5 ml., or metallic bismuth 0.2 g.—to obviate Herxheimer-Jarisch reactions, a full course of intramuscular penicillin is given in doses of 40,000 units every three hours (preferably), or 300,000 units every 12 hours, for a total dosage of 4,000,000 or even 5,000,000 units. This is then followed by the usual standard course of fever therapy—e.g., induced malaria to 12 rigors if possible, or at least 10. Arsenic and bismuth therapy is then given in weekly doses of neoarsphenamine (0.45 g.) or mapharsen (0.06 g.) or "acetylarsan" (diethylamine acetarsone) (3 ml.) and bismuth—e.g., 1 to 0.5 ml. of bismostab=20% suspension of precipitated metallic bismuth in isotonic glucose solution. Twelve injections of each substance constitute a course. Three such courses should be attempted during the year, the intervals between them depending upon the patient's tolerance and progress. The cerebrospinal fluid is examined every six months and treatment is continued until the serological reactions become negative. A further examination should be made six months later and then at intervals of one year for two years.

In cases of general paresis in which malarial or fever therapy is contraindicated by reason of hyperpiesis or cardiovascular disease one needs to rely on penicillin alone. So far I have had only two such cases, which I have been able to follow up for an appreciable period.

One case, that of a woman aged 47 with early general paresis showing the usual and typical cerebrospinal fluid changes (14 small lymphocytes, total protein 60 mg., Lange curve of paretic type, strongly positive Wassermann reaction, and Meinicke 4431), had aortic valvular disease with regurgitation and a blood pressure of 250/100. She was given 10,000 units of penicillin intrathecally in 10 ml. of saline daily for nine days, and at the same time the standard course of 40,000 units of penicillin every three hours for 7½ days, by parenteral injection. No noteworthy therapeutic reaction occurred, and meningeal reaction following the first intrathecal injection was comparatively slight (cerebrospinal fluid 420 cells—60% polymorphs and 40% lymphocytes—and total protein 100 mg.). Two months later the cerebrospinal fluid showed only two cells, total protein 25 mg., Wassermann reaction negative, and Lange curve still paretic. The blood Wassermann reaction was still strongly positive. Six months later her clinical condition remained satisfactory and the cells and total protein of the cerebrospinal fluid were normal; the Wassermann reaction of the cerebrospinal fluid, however, was now weakly positive and that of the blood still strongly positive.

The second case was that of a man aged 45 with early general paresis, hyperpiesis—blood pressure 240/120—and enlarged left ventricle. The cerebrospinal fluid changes were typical, with strongly positive Wassermann reaction and paretic Lange curve. The usual standard course of penicillin by intramuscular injection was given. He received no intrathecal treatment. Three months after treatment the cell and total protein content in the cerebrospinal fluid were normal and the Wassermann reaction was negative; the Lange curve was still paretic and the blood Wassermann reaction positive. Six months later (nine months after penicillin treatment) his clinical condition had remained more or less stationary, but the cerebrospinal fluid Wassermann reaction was positive, as was that of the blood; the Lange curve was still paretic in type.

The persistence of the paretic Lange curve in both cases is of interest. With the tendency to serological relapse in these cases, it would seem inadvisable to rely on penicillin alone in the treatment of general paresis if malarial or fever therapy is likely to be tolerated. To detect any tendency to relapse the cerebrospinal fluid should be examined at intervals of six months until the serological reactions have been negative for two years, clinical improvement having been maintained. Taboparesis is treated in the same manner as general paresis.

(b) Tabes Dorsalis

No dramatic change is to be expected in tabes dorsalis following penicillin treatment, although in common with other forms of neurosyphilis a pathological cerebrospinal fluid usually shows definite improvement, and there is an

improvement in symptoms—even if temporary—in some 40% of cases.

As a result of earlier experiences I have not been in favour of treating tabes dorsalis with malarial or fever therapy; this I have stated elsewhere (Worster-Drought, 1940). After two or three years' intensive treatment with courses of arsenical and bismuth therapy most cases of tabes dorsalis (and especially early cases) can be arrested and the serological reactions rendered negative. Admittedly, a negative serology does not necessarily indicate arrest of the disease process, and some symptoms—more particularly attacks of lightning pains—are apt to persist.

I now treat cases of tabes dorsalis with an initial course of penicillin given intramuscularly. Although all the earlier cases received the usual standard course I have treated later cases with a larger total dosage (40,000 units every three hours, up to a total of 4,000,000 or 5,000,000 units); other cases have received larger doses at longer intervals (300,000 units every 12 hours or 500,000 units every 24 hours, for eight days). The course of penicillin is then followed up with arsenical (neoarsphenamine or acetylarsan) and bismuth therapy in the usual doses. I intend to continue this arsenical–bismuth treatment up to one or two years, according to the progress of the patient's symptomatology and serological reactions, which are determined from time to time at the same intervals as given for general paresis.

Attacks of so-called lightning pains often persist in tabes dorsalis even when other symptoms are absent and when the disease is apparently arrested, or at least has reached a quiescent stage, and long after the serological reactions have become negative and the cerebrospinal fluid is normal. I have now treated several cases showing negative serological reactions with courses of penicillin by intrathecal and intramuscular injection combined and by intramuscular injection alone. The results as regards the lightning pains have been variable. In a few cases treated by intramuscular injections only (the usual standard course), relief from lightning pains has occurred without relapse over periods of observation up to 12 months. In other cases a remission of several months' freedom from these pains has followed the course of treatment—that is, considerably longer intervals between the attacks of pain than before treatment—while other cases have remained unaffected.

I have also treated a few cases (tabes dorsalis with negative serology and apparent quiescence of the disease apart from the lightning pains) with penicillin given intrathecally (10,000 units in 10 ml. of saline daily for eight days and accompanied by the usual standard course of penicillin injections intramuscularly), and the results as regards subsequent freedom from lightning pains (up to six months' follow-up observation) have been rather better than in those cases treated by parenteral injection alone. The disadvantage of intrathecal treatment, apart from the usual risks, in these cases, however, is that the first intrathecal injection of penicillin is apt to provoke a very severe attack of generalized nerve-root pain accompanied by pyrexia and considerable meningeal reaction.

Some cases of gastric crises have been definitely improved by penicillin treatment, but a few have remained unaffected. I have not observed any material change in Charcot's arthropathy as a result of penicillin treatment.

(c) Primary Optic Atrophy

I have been able to convince myself that malarial therapy (preferably followed by bismuth and arsenical treatment) is capable of arresting primary optic atrophy of syphilitic origin (tabes optica) from a series of cases followed up to six years after treatment. It is known that 75% of untreated cases become totally blind within three years and 100% within five years (Lehrfeld and Gross, 1938). Consequently the observation of any patient treated must extend to five years or longer before success can be claimed.

The experiences of Moore, Woods, Hopkins, and Sloan in America, ranging from 1932 to 1942, also confirm the beneficial effects of malarial therapy in primary optic atrophy. Only 14.6% of 16 cases of primary syphilitic optic atrophy became blind within three years of treatment, and thereafter there was no rise in the incidence of blindness.

"Excellent initial effects" following penicillin treatment are reported by some observers. Rose and his co-workers (1946) record "apparent arrest of visual loss" in five of six cases of primary optic atrophy treated with penicillin and half the usual amount of fever therapy. In view of the fact, mentioned above, that primary optic atrophy can slowly progress for five years before blindness ensues, it is clearly far too early to consider possible arrest of primary optic atrophy following penicillin treatment alone, and I doubt if complete arrest is possible as a result of penicillin treatment, however administered, without concomitant fever therapy.

I would still advocate full malarial or fever therapy in primary optic atrophy, but I now start treatment with a course of intramuscular penicillin (total dosage of 4,000,000 units) and follow this with 10 to 12 malarial rigors, according to the patient's tolerance. Also, I prefer to follow the malaria with arsenical and bismuth therapy until the serological reactions become negative.

(d) Late Asymptomatic Neurosyphilis

Asymptomatic neurosyphilis is a term applied to the condition in which pathological changes due to syphilitic infection exist in the cerebrospinal fluid but the patient neither complains of symptoms nor shows any abnormal neurological signs.

Two types of asymptomatic neurosyphilis must be distinguished: (1) That occurring in the earlier stage of syphilitic infection coincident with or shortly after the secondary stage or period of general invasion (early asymptomatic neurosyphilis). This form of the disorder is of meningovascular type and readily amenable to treatment. (2) That detected long after primary infection as a result of an examination of the cerebrospinal fluid either because the blood has been found to yield a positive Wassermann reaction—for example, in a proposed blood donor—or during the routine investigation of a patient with a history of syphilis (late asymptomatic neurosyphilis). It is probable that this latter type is classifiable as a form of parenchymatous neurosyphilis in that the pathological changes in the cerebrospinal fluid are only slightly, if at all, influenced by intensive treatment with the ordinary antisyphilitic remedies. Observations have shown that late asymptomatic neurosyphilis often terminates in general paresis—a fact that led Solomon to term the condition "paresis sine paresi." Even with malarial or fever therapy followed by arsenical–bismuth treatment three or four years may elapse before the serological reactions in the blood and cerebrospinal fluid are favourably influenced.

From the reports on penicillin treatment applied to asymptomatic neurosyphilis it is clear that not sufficient distinction has been drawn between the "early" and the "late" type. As a form of meningovascular neurosyphilis early asymptomatic neurosyphilis is rapidly and favourably influenced by penicillin. Also, so far as can be judged at so early a stage, penicillin is most valuable in the treatment of late asymptomatic neurosyphilis even if regarded only as an additional measure. Reports indicate improvement in the cerebrospinal fluid of many cases treated with penicillin alone, although in some of the records it is by no means clear whether the authors are including cases of early asymptomatic neurosyphilis. Stokes and his co-workers (1946) report improvement in 60% of cases of asymptomatic neurosyphilis; also Lloyd-Jones and his co-workers (1946) report that of 10 cases treated with massive daily doses of penicillin (300,000 to 500,000 units) given intramuscularly to a total dosage of 2,400,000 to 5,000,000 units, the cerebrospinal fluids of four of the 10 cases reverted to normal within six weeks (these cases may have been examples of early asymptomatic neurosyphilis). Although the cerebrospinal fluids of the remaining six cases showed improvement (as one would expect) they had not become serologically negative at the time of reporting.

Owing to the known severity of late asymptomatic neurosyphilis as regards prognosis, my view is that the condition should be treated with a full course of penicillin consisting of a total dosage of at least 4,000,000 units given by intramuscular injection in doses of 40,000 units every three hours (preferably), of 300,000 units every 12 hours, or of 500,000 units every 24 hours; with the last-mentioned method the total dosage should

be 5,000,000 units. The period of penicillin therapy is then followed by full pyrexial therapy—for example, malaria, 10 to 12 rigors—and, finally, by the usual arsenical–bismuth therapy until the cerebrospinal fluid is normal and the serological reactions are negative. As with other cases of neurosyphilis, the cerebrospinal fluid should be examined at intervals of six months, and, following a negative result, at yearly intervals for two years.

(e) Erb's Syphilitic Spinal Paralysis

This form of parenchymatous neurosyphilis (antero-lateral spinal sclerosis of syphilitic origin) results from degeneration in the antero-lateral portions of the spinal cord, and is notoriously resistant to treatment by all previously known methods. Tucker (1946) has treated four cases with penicillin, giving a total dosage of 2,000,000 to 10,000,000 units by intramuscular injection in repeated doses of 25,000 units every three hours for 10 to 25 days. No improvement resulted. One patient died, six months after treatment, from *Clostridium welchii* infection, and the other three failed to show improvement after 121, 376, and 582 days. In the only case I have been able to treat with penicillin the result was similar.

Summary and Conclusions

Penicillin has a definite and established place in the treatment of neurosyphilis.

Most of the present-day experiences are based on the "standard" course of penicillin established in 1944 for the treatment of early syphilis in the British Services and in the U.S. Army in Europe (a total dosage of 2,400,000 international units given by parenteral injection in doses of 40,000 units every three hours, day and night, for seven and a half days).

In view of the percentage of relapses even in early syphilis it is considered doubtful if this course is sufficient for neurosyphilis. It is suggested that a total dosage of at least 3,000,000 units be given to all cases of neurosyphilis and that in parenchymatous neurosyphilis the total dosage should reach 4,000,000 to 5,000,000 units.

It may prove unnecessary to keep penicillin in the blood at as high a continuous level as possible throughout the period of treatment. If so, equally good therapeutic effects may be obtainable with larger doses of penicillin given at longer intervals (300,000 units given every 12 hours or 500,000 units every 24 hours for 8 to 15 days). Such a method would enable cases of chronic neurosyphilis to be treated as out-patients.

Intramuscular injection is the best method of administering penicillin. For reasons given, the intravenous route—either by continuous drip or by repeated single injections—has little to commend it.

There is no evidence that the intrathecal administration of penicillin is of greater therapeutic value in neurosyphilis than when the remedy is given by intramuscular injection. Because of the resulting reactions and the various additional risks intrathecal injection of penicillin is best avoided in most cases of neurosyphilis.

Owing to the risk of possible Herxheimer-Jarisch reactions following the first doses of penicillin, all cases of neurosyphilis should receive an initial series of bismuth injections before starting the full course of penicillin.

The rapid beneficial effects of penicillin on the cell and protein content of the cerebrospinal fluid suggest a special selective action on the meninges or cerebrospinal fluid.

In meningovascular neurosyphilis the course of penicillin should be followed by full arsenical and bismuth therapy in view of the percentage of relapses, even in cases of early syphilis treated with penicillin alone.

General paresis is best treated with an initial course of penicillin of total dosage of 4,000,000 to 5,000,000 units followed by full malarial or fever therapy (10 to 12 malarial rigors). Finally, the usual courses of arsenic and bismuth are advisable until the serological reactions become negative.

In cases of general paresis (and taboparesis) in which malarial or fever therapy is contraindicated by reason of cardiovascular disease, one must rely on penicillin alone. Some improvement, but not cure, can be expected.

In tabes dorsalis no dramatic change follows penicillin treatment. Cases are best treated with an initial course of penicillin and then with the usual courses of arsenicals and bismuth for two to four years until apparently quiescent and the serological reactions have become negative. Special symptoms such as lightning pains and gastric crises benefit from penicillin in some cases, including those in which the serological reactions are already negative.

Primary optic atrophy of syphilitic origin can be arrested in a fair proportion of cases by malarial therapy. Penicillin alone is not likely to arrest the optic atrophy, but may prove useful in hastening arrest or in bringing about arrest in an even larger proportion of cases. Treatment should consist of an initial course of penicillin of total dosage 4,000,000 to 5,000,000 units, followed by full malarial therapy (10 to 12 rigors) and afterwards arsenicals and bismuth. Observation of any patient must extend to five years or longer before success can be claimed for any form of treatment.

A distinction must be drawn between early asymptomatic neurosyphilis and late asymptomatic neurosyphilis. The latter condition, being of serious import, must be treated with penicillin and malarial or fever therapy on the same lines as general paresis.

At least five years must elapse before we can determine fully the value of penicillin in neurosyphilis.

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THE MODERN TREATMENT OF NEUROSYPHILIS

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During the last eight years over 50 patients suffering from various types of neurosyphilis, chiefly in the earlier stages, have been treated in this clinic by three different methods. Twenty-five who had not responded satisfactorily to pentavalent arsenic and bismuth were treated by infection with tertian malaria, followed by chemotherapy (Lescher and Richards, 1944). Ten more were given penicillin alone; and a further 19 were treated by malaria combined with penicillin. Forty-seven have been followed up both clinically and serologically, examinations of the spinal fluids having been made at definite intervals. It is our intention here to try to compare the results of these three different methods of treatment.

Treatment of Neurosyphilis with Malaria and Chemotherapy

Until recently it was considered that the most satisfactory method of treatment of neurosyphilis was with malaria, followed by tryparsamide and bismuth. The latest review is by Nicol (1946), who treated and followed up 217 patients suffering from taboparesis or dementia paralytica. Over 50% improved clinically, and in 70% the spinal fluids became negative. Of the 25 patients in our series who were treated by this method, 20 have been followed up for from five to eight years (Tables I and II).

TABLE I.—*Clinical Results after Treatment with Malaria and Chemotherapy*

Type	No.	Much Improved	Improved	Stationary	Worse
Meningovascular ..	5	4	1	—	—
Tabes	10	2	4	2	2
Tabes with marked optic atrophy	4	—	—	2	2
Dementia paralytica	1	—	1	—	—
Totals ..	20	6	6	4	4

TABLE II.—*Serological Results after Treatment with Malaria and Chemotherapy*

Type	No.	Cerebrospinal Fluid				Blood		
		Strong Pos.	Weak Pos.	Inactive	Neg.	Neg.	Improved	Pos.
Meningovascular	5	—	—	2	3	3	2	—
Tabes	10	1	2	1	6	6	2	2
Tabes with marked optic atrophy	4	—	—	3	1	1	1	2
Dementia paralytica	1	—	—	1	—	—	1	—
Totals ..	20	1	2	7	10	10	6	4

In classifying the spinal fluids in neurosyphilis Dattner's method (Dattner *et al.*, 1944) has been adopted. The various groups may, however, merge one into another.

(1) *Strongly Positive.*—Cell count and total protein increased. Paretic gold curve (first zone). Strongly positive W.R.

(2) *Weak Positive.*—Cell count normal or slightly raised; amount of protein increased. Paretic gold curve. W.R. strongly positive to positive.

(3) *Inactive Fluid.*—Cell count normal; marked reduction in the total protein. Gold curve may or may not be positive. W.R. positive.

(4) *Negative Fluid.*—Cell count normal; normal amount of protein. Normal gold curve. Negative W.R.

Each patient in the series was infected with tertian malaria, and ten bouts of fever were generally allowed. The duration of each bout averaged from eight to twelve hours, and no difficulty was experienced in stopping the infection by means of quinine. During the stage of fever the intake of fluids and the output of urine must be watched, and the urine should be tested for its salt content, as there is a danger of salt depletion. No complication occurred. Care was taken, however, not to employ malarial therapy in any patient of poor nutrition, or in those suffering from debilitating diseases or infections, especially those of the kidneys and bladder. Further, malarial therapy was not given to those in whom there was evidence of damage to the cardiovascular, renal, or hepatic system.

To assess accurately the clinical results in a chronic disease so complex as neurosyphilis is far from easy, for clinical improvement depends not only on the death of the spirochaete and the subsidence of the inflammatory reaction but also on the extent of destruction of nerve tissue. It cannot be expected, then, that scarred and destroyed nervous tissue can ever be restored to normal by treatment, or that nervous wrecks can be rehabilitated. The results of treatment in the present series (Table I) conforms in most respects to the results obtained by others. There is often improvement in the general health, as well as in such symptoms and signs as lightning pains, ataxia, and disorders of micturition, and in libido. In some, arrest of failing vision was noted.

However, the clinical disappointments are to some extent offset by the almost mathematical accuracy of the information on the activity of the disease and the need for further treatment gained by serial examinations of the spinal fluid. For in neurosyphilis there is a definite relationship between the pathological state of the nervous system and its reflection in the spinal fluid. Dattner *et al.* (1944) say that "for evaluating the success of treatment in neurosyphilis the spinal fluid syndrome is a far better guide than clinical symptoms." Whelan (1946), after examining a series of patients suffering from dementia paralytica and taboparesis, found that the majority of spinal fluids became inactive within six to twelve months after the termination of treatment with malaria, and, further, that there was a strong probability that the reactions would become negative in from one to three years without any further treatment. She found also that these fluids seldom reverted. Our experience, on the whole, bears out these conclusions.

Treatment of Neurosyphilis with Penicillin

Although penicillin is being used alone or combined with malaria in the treatment of neurosyphilis in many clinics in this country, few detailed accounts have as yet appeared in the medical press; a number of communications have, however, come from the United States. The earliest was from Stokes and his fellow workers (1944), but as it was a preliminary report no definite conclusion could be reached except that of encouragement. Later the same authors (Stokes *et al.*, 1946) claimed successful clinical and serological results from treatment with penicillin in 197 patients suffering from various forms of neurosyphilis. They found that the maximum improvement occurred in the first 120 days after its use, although it could continue beyond this time. Relapses were infrequent; little difference was found between high dosage (5–8 mega units) and low (1–4 mega units); no better results were obtained from a repetition

of the course. Gammon and his associates (1945), Nelson and Duncan (1945), Rose (1945), and Smith (1947) also reported successful results. O'Leary, Brunsting, and Ockuly (1946) and Mohr and Moore (1946) observed great serological improvement after the use of penicillin, but clinically the results were not so striking. No significant advantage was found to occur with amounts greater than 5 mega units. Marshall (1946) gives two courses of penicillin, followed by chemotherapy, with clinical improvement. Callaway and his associates (1946) consider that treatment with penicillin is more effective than with malaria. On the other hand, Rose and his colleagues (1945) concluded that there was little to choose between malarial therapy followed by tryparsamide and that of penicillin alone. Bruetsch (1946) found that penicillin is not so efficacious as malaria in the treatment of syphilitic optic atrophy.

In the above reports a total of 1–10 mega units of penicillin was given in divided doses, intramuscularly, every three hours. The intrathecal route has also been employed. Goldman (1945) considers that the results justify further study, but he gives no account of a follow-up. O'Leary, Brunsting, and Ockuly (1946) and Thrasher (1945) also claim more rapid serological reversals with this method. McDermott and Nelson (1945), Marshall (1946), and Neymann, Heilbrunn, and Youmans (1945), however, consider that this route is dangerous. But as penicillin which contains at least 90% penicillin G (II) and is free from impurities has been issued for special purposes—for example, for intrathecal injection—since these reports, any irritant property that it formerly possessed should be of a lower degree.

Ten patients in our series were treated each with intramuscular injections of penicillin in oil, 125,000 units twice daily, until four mega units had been given. The course was preceded by smaller doses for the first two days to avoid the possibility of a Herxheimer reaction (Tables III and IV). They have been followed up both clinically and

Table III.—*Clinical Results after Treatment with Penicillin*

Type	No.	Much Improved	Improved	Stationary	Worse
Meningovascular ..	2	2	—	—	—
Tabes	6	1	2	2	1
Taboparesis	2	1	1	—	—
Totals ..	10	4	3	2	1

Table IV.—*Serological Results after Treatment with Penicillin*

Type	No.	Cerebrospinal Fluid				Blood		
		Strong Pos.	Weak Pos.	Inactive	Neg.	Neg.	Improved	Pos.
Meningovascular	2	—	—	2	—	—	1	1
Tabes	6	—	1	2	3	2	1	3
Taboparesis ..	2	—	—	2	—	—	1	1
Totals ..	10	—	1	6	3	2	3	5

serologically. There is a difficulty, however, in comparing the results obtained at the present time with penicillin with those obtained with the earlier preparations, for penicillin has been a changing mixture. Formerly much of it contained an appreciable amount of penicillin K, which is inefficacious against *Treponema pallidum*, and this may have been responsible for the poorer results obtained in the treatment of syphilis. At present penicillin of a purity of 90% can be produced, and it does not contain K substance in any significant amount; but to assess accurately the value of penicillin in the treatment of neurosyphilis more knowledge is required, especially as regards the dosage and the duration of treatment. Time and experience should give the answer to this problem; most investigators have certainly stressed this.

Treatment of Neurosyphilis with Malaria and Penicillin

It is now established that penicillin is a definite spirochaeticidal agent; and malaria has stood the test of time as an effective therapeutic method in the treatment of neurosyphilis, very probably by raising in some manner the immunity of the host, besides having itself a spirochaeticidal action. Eagle and Musselman (1944) have found that the rate at which spirochaetes were killed *in vitro* by penicillin increased with a rise of temperature, the optimum being 39–40° C. It seems reasonable, therefore, to expect that owing to their complementary action a combination of these two methods may be likely to enhance the beneficial effects of either.

A few papers giving preliminary results of this combined treatment have appeared in the United States. However, no reports have yet been published in Great Britain, although the method is being employed in some clinics in this country. Rose and his associates have so treated 70 patients with clinical and, to a greater extent, serological improvement. Reynolds, Mohr, and Moore (1946), and Rose and Solomon (1947) consider that this combined method is superior to that with penicillin alone; Nicol (1946), despite his success with malaria and tryparsamide, advocates treatment with malaria together with penicillin. O'Leary, Brunsting, and Ockuly (1946), however, have found no appreciable difference either clinically or serologically with the combined treatment, compared with that of malaria alone, except in the asymptomatic and meningeal forms of disease.

We started in August, 1945, to use penicillin combined with malarial therapy. Nineteen patients suffering from various forms of neurosyphilis, mostly in the earlier stage, have been so treated and followed up (Tables V and VI); others are at present undergoing this method of treatment, but are not included in this review.

Table V.—*Clinical Results after Combined Treatment with Malaria and Penicillin*

Type	No.	Much Improved	Improved	Stationary	Worse
Asymptomatic ..	3	3	—	—	—
Meningovascular ..	1	1	—	—	—
Tabes	8	3	2	3	—
Dementia paralytica	7	2	3	2	—
Totals ..	19	9	5	5	—

Table VI.—*Serological Results after Treatment with Malaria and Penicillin*

Type	No.	Cerebrospinal Fluid				Blood		
		Strong Pos.	Weak Pos.	Inactive	Neg.	Neg.	Improved	Pos.
Asymptomatic ..	3	—	—	1	2	1	—	2
Meningo-vascular	1	—	—	—	1	—	1	—
Tabes	8	—	1	4	3	3	—	5
Dementia paralytica	7	1	—	5	1	2	1	4
Totals ..	19	1	1	10	7	6	2	11

A wax–oil preparation of penicillin was given just before and during the acute stage of the malarial infection, 250,000 units being injected twice daily, to a total of 4 mega units. To avoid the possibility of a Herxheimer reaction, a small dose was given for the first two days. It was confirmed that penicillin had no inhibiting effect on *Plasmodium vivax*. These patients attended the follow-up department at regular intervals afterwards, and the changes in the spinal fluids were carefully watched. One problem has been practically solved. A patient will not submit willingly to

periodic lumbar punctures if each is followed by a severe headache; but since we have started to use the fine Dattner needle the complaint of post-puncture headache has rarely been made. Follow-up lumbar punctures are performed in the out-patient clinic, and the patient leaves shortly afterwards.

Comparison of the Three Methods of Treatment

Two difficulties are apparent in attempting a just comparison between these three different methods of treatment. The number of patients in each series is too small to draw an absolute conclusion; and enough time has not elapsed to complete a thorough follow-up of those who have been treated with penicillin or with penicillin combined with malaria. This paper must therefore be considered rather as an interim report.

In comparing the various tables, after reducing the figures to percentages, the best clinical results are seen to have been achieved with malaria and penicillin, closely followed by those obtained with penicillin alone; the results obtained by combined treatment with malaria and chemotherapy come last.

Serologically there are several points to notice. In our series a greater number of positive spinal fluids became inactive within six months after the combined treatment with malaria and penicillin than with the two other methods. So rapidly may this change occur that some fluids have been found to become inactive directly after the termination of this form of treatment. The total number of spinal fluids that have become inactive and negative is higher in those treated with malaria and penicillin and with penicillin alone; but more fluids have become negative and remained negative after malaria and chemotherapy. It is possible, however, that it is merely a question of time, since those patients who have been treated with the latter therapy have been followed up for a longer period; and there is reason to suppose that in time more spinal fluids of these patients treated with malaria and penicillin will eventually become negative. After treatment with malaria and chemotherapy a greater percentage of spinal fluids remain positive than with the two other methods.

It seems, therefore, that in active neurosyphilis the method of choice, at least for the present, is to treat the patient immediately with penicillin and malaria (provided there is no contraindication to the latter). If at the end of twelve months from the termination of this method of treatment the spinal fluid is still found to be positive, or if it remains inactive after two years, treatment with penicillin or with penicillin and malaria can be repeated. Even in "burnt-out" cases of neurosyphilis with subjective sensations and objective signs, but with negative spinal fluids, clinical improvement may still occur with further treatment.

Treatment of Latent Neurosyphilis

There is enough evidence to show that *Treponema pallidum* may invade the central nervous system early in the septicaemic stage of the disease, yet the organism can remain latent for a varying period without showing clinical evidence. In asymptomatic neurosyphilis, which can easily be detected by the examination of the cerebrospinal fluid, correct therapy is of the greatest importance, for by it further progress can be prevented. Thorough treatment with trivalent arsenic, together with bismuth, will often at an early stage cause a positive fluid to revert permanently to normal. For in dealing with neurosyphilis it is not enough to wait for obvious clinical signs of disease, as by this time irreparable damage has been done. The spinal fluids of all patients who have received adequate treatment for early syphilis should therefore be examined at the end of the first year of treatment. A positive fluid will mean that there is a danger that the patient may at any time develop clinical neurosyphilis, with pathological changes in the brain or spinal cord. In our opinion intensive treatment, preferably with penicillin and malaria, should under these circumstances then be started.

It is also advisable to employ the latter method of treatment in those who show evidence of latent neurosyphilis of longer standing. If a positive Wassermann reaction in the blood is found in a person with no other signs of syphilis, and who has not had adequate treatment, it will often be observed that the spinal fluid is also positive. (We have seen this a number of times in prospective blood-donor volunteers on whom a blood Wassermann reaction has been performed as a routine.)

Summary

Forty-nine patients suffering from neurosyphilis in varying forms and degrees have been treated by one of the following three methods: 20 with malaria and chemotherapy, 10 with penicillin, and 19 with malaria together with penicillin.

Each patient has been followed up clinically and serologically.

An attempt has been made to compare the results of these three different methods of treatment.

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The Communist Party has issued a pamphlet entitled *Health Centres* (3d. post free from Central Books, Ltd., 2–4, Parton Street, London, W.C.1). This memorandum outlines advantages to the general public to be obtained from health centres, as well as those to the medical profession, such as regular hours off duty and periods for postgraduate study. It suggests that the most suitable size for a health centre in an urban area covering a population of 10–20,000 would be for 5–10 doctors. There would be individual consulting rooms, one comfortably furnished waiting room, a large treatment room providing facilities for minor surgery, a rest room, a reception office, and a dispensary. In addition there would need to be W.C.s, store rooms, a kitchen, and accommodation for staff. Such a centre would require 4–8 nurses, 2–4 clerks, 1–2 dispensers, a cook, and several domestics. Ancillary diagnostic and therapeutic aids could be obtained at the nearest hospital, the patient being sent direct from the centre with a request for the desired examination without having to see a specialist at the hospital. In country areas health centres would be smaller, being staffed by perhaps 2–4 doctors. The memorandum contends that "there is an urgent need to get the idea of health centres realized in practice immediately following the inception of the National Health Service," but it recognizes that it will be necessary to improvise in view of the resources available.

PRIMARY MENINGOCOCCAL OPHTHALMIA

BY

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The following two cases, seen in Leeds school-children, are considered worthy of record because the condition is uncommon and was relatively unknown until the recent war, during which several cases have been described. With the exception of the four cases of Hayden and Hayden (1939), Bennett (1940), and Clifton and Laird (1941), all cases in which the literature has been available to us have occurred in America.

Case I

A boy aged 7 years reported at the ophthalmic casualty clinic with a sore left eye which had troubled him since the previous evening. Examination showed a left acute purulent conjunctivitis; the cornea was hazy, it did not stain, and there was no hypopyon. The right eye was white. Hot steam bathings, mercury oxycyanide lotion 1/8,000, and dark glasses were ordered. On the next day there was no pus but still a marked injection of the conjunctiva. Fluorescein showed a superficial corneal involvement. The following day the boy was admitted with a central corneal ulcer; a swab was taken, and the lacrimal sac syringed and found patent.

Treatment in the ward consisted of thrice-daily hot bathings and application of ung. atropin. 1% twice a day. In seven days the corneal lesion had healed, though there was slight pericorneal injection, and he was discharged home. Seen as an out-patient three days later, he still had this residual injection, and 30% sulphacetamide drops twice daily were ordered. Six days later the eye was white. No corneal scar remains—evidence that Bowman's membrane was not involved in the ulcerative process of the cornea. Vision in both eyes is 6/6.

Bacteriology.—On first isolation a moderately heavy pure culture of *Neisseria* was obtained; the organism grew rapidly and healthily on ordinary chocolate agar without a carbon-dioxide atmosphere. It was strongly oxidase-positive and had the morphological and cultural characteristics of the meningococcus. In view of the possibility that this was a relatively non-pathogenic neisseria—such infections having been reported—an interim report was sent, and the organism was subcultured into fermentation-heated blood broth. As the organism fermented glucose and maltose but not sucrose it was considered to be a meningococcus. By the time these fermentation reactions had been checked the eye showed only slight injection.

Case II

A year later a boy aged 6½ years reported to the out-patient department with a four-day history of a sore and discharging left eye. Examination revealed a chemosis of the left conjunctiva with pus at the inner canthus. There were also two raised nodules on the bulbar conjunctiva, some 2 to 3 mm. in diameter and each discharging pus. The cornea was clear. The right eye was white. A swab was taken and the boy sent home with the eye covered by a flap of lint, and with instructions that hot-spoon bathings should be given three times a day and penicillin drops, 2,000 units per ml., instilled three-hourly. Two days later the eye was much improved; treatment was continued. When seen after a further two days—that is, four days' treatment in all—the eye was white. The local penicillin treatment was continued for another two days. The vision in both eyes is now 6/6.

Bacteriology.—A swab was taken at the first attendance. On initial isolation a profuse pure culture of *Neisseria* was obtained. The coccus had exactly the same characteristics as that isolated in Case I, and gave a positive agglutination reaction with antiserum to meningococcus Type II only. The organism was therefore a meningococcus. It was markedly sensitive to two drops of penicillin (2 units per ml.), using the "punch-plate" technique. An eye swab taken one week later gave no growth on chocolate agar after incubation for three days. In view of the possibility of an auto-infection, if the child was a carrier, a West's nasopharyngeal swab was taken. No meningococcal colonies were obtained, though β-haemolytic streptococci, *Haemophilus*, and a few *Neisseria catarrhalis* strains were cultured. It was unfortunately not possible to obtain swabs from the patient's younger brother.

In both the above cases there was no complaint of a sore throat, either before or during the period of eye infection, nor was any history obtainable of contact with a case of meningitis. No case of meningococcal infection (meningitic, septicaemic, or conjunctival) occurred subsequently among the family of either patient, although the boy in Case II slept in the same bed as his younger brother. It is, however, of interest that, two months later, both the brothers were attacked at the same time by bilateral pneumococcal conjunctivitis, and ten days later their father also became infected. The probability, therefore, may well be that meningococcal ophthalmia is not highly infective—a suggestion supported by the general rarity of the condition. It is, however, possible that some cases have remained undiagnosed because, as records show, confusion between this condition and blennorrhoea has been caused by direct examination of pus by the stained-smear technique only, a full cultural investigation not being undertaken.

Discussion

Cases of meningococcal ophthalmia so far reported appear to fall roughly into three natural groups:

Primary cases: (*a*) not complicated by meningitis; (*b*) in which cerebrospinal fever follows the conjunctivitis (Reese, 1936; Mangiaracine and Pollen, 1944).

Secondary cases—those occurring as an associated infection during and/or shortly after an attack of cerebrospinal fever (e.g., Cushing, 1940).

The possibility of an ensuing meningitis indicates the need for early recognition and treatment in uncomplicated primary cases. Meningococci have been isolated from the conjunctiva by various workers (Duke-Elder, 1938), and it is presumed that, like the nasopharynx, with which it is continuous, it acts as a "carrier" reservoir and is a potential source of invasion, whether or not inflammation supervenes.

The records show that the methods of treatment adopted have been: (1) local symptomatic, with or without systemic sulphonamide; (2) local sulphonamide, with or without systemic sulphonamide; (3) systemic penicillin (Herrell, 1945). Choice of method did not seem to affect noticeably the return of the eye to normal, but local chemotherapy would seem desirable from the point of view of removing the meningococcus from a potentially dangerous site as soon as possible.

Some salient features of the condition, culled from the literature, with the addition of our own cases, are brought out in the following table.

	No. of Cases
Total cases	30
Age group:	
Under 2	2
2–25	18
Over 25	0
No indication	10
Sex:	
Male	21
Female	2*
No indication	7
Average duration in days	8
Bilateral in	12
Corneal ulceration present in	5
Complications:	
Meningitis followed in	1
Meningococcal septicaemia followed in	2
Source of infection:	
History of sore throat (meningococci recovered in 1 case)	11
History of contact with meningitis	2*
Direct implantation from throat	1

* Same cases.

The predominance among males is well seen, the only specifically mentioned female cases being direct contacts of meningitis. (Mangiaracine and Pollen give no indication of the sex of five of their patients.) In nearly half the cases both eyes were involved, either simultaneously or at short intervals; corneal ulceration is mentioned in one-sixth of cases; in no case was the eye permanently damaged by the infection. Meningitis is an unusual but possible sequel.

Summary

Attention is drawn to the importance of recognizing the meningococcus as a primary cause of conjunctivitis.

Two cases in Leeds school-children are described, the first being treated eventually by local sulphacetamide and the second by local penicillin, with good results.

Some aspects of the literature are discussed.

We wish to thank Mr. John Foster, honorary ophthalmic surgeon to the Leeds General Infirmary, who was in charge of these cases, for his interest and encouragement and for his permission to publish this account. Our thanks are also due to Prof. J. W. McLeod, professor of bacteriology in the University of Leeds, to our colleagues in the department, and to Prof. A. Loewenstein for much helpful advice and criticism.

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THE BIOCHEMISTRY OF SENESCENCE*

BY

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Ray Lankester differentiated between "specific longevity" (the expectation of life at birth of a normal individual) and "potential longevity" (the duration of life which might be expected under an ideal environment). Knowledge of the processes involved in senescence, by which term we usually imply the generalized weakening of the vitality that accompanies growing old, may be expected to narrow the gap between specific and potential longevity. No doubt a gap must always remain, for even if we knew enough to provide the ideal physiological environment with complete protection from disease, and if we had the wit to apply our knowledge, there would still be occasional accidents.

The use of the term "potential longevity" implies a belief that the life of an organism is in fact limited and that senescence with ultimate death is its necessary fate. It is perfectly possible to argue that certain single-celled organisms are potentially immortal, since, given the proper environment, they appear to be capable of reproducing themselves indefinitely. In one experiment extending over five years a single cell of paramecium was shown to be capable of producing 2^{3029} similar cells (equivalent to 10^{1000} times the volume of the earth), and the last cultures showed no signs of senility. But even if we admit that a complex organism such as man may be regarded as potentially immortal in the special sense that he can apparently produce children who in turn can reproduce their species, and so on *ad infinitum*, we have no reason for believing that the individual man can escape death. In studying senescence, therefore, we are not looking for the *elixir vitae*; we are seeking, from the point of view of abstract knowledge, to understand the changes produced by the passage of time; and by applying such knowledge we may hope to achieve a closer approximation between "specific" and "potential" longevity, with, in particular, an extension of the period of active and useful life. To believe in the possibility of such an approximation and to attempt its achievement is not to deny the proposition that heredity plays an important part in determining longevity. Whatever part heredity may play, be it great or small, the actual duration of life is the resultant of the effects of inheritance and environment. We may at least seek by knowledge and the application of knowledge to influence the latter.

Changes in Basal Metabolic Rate

There are many scattered references in the literature to quantitative changes associated with old age, in the composition of body fluids, in the estimated need for particular nutrients, and in the functional capacity both of individual organs and of the body as a whole. Perhaps the best-known of these is the change in the basal metabolic rate. The "prediction tables," produced by estimating the B.M.R. of considerable groups of subjects of different ages, indicate that the B.M.R. is practically constant during adult life to the age of 40, but thereafter falls each decade by approximately 1 calorie per sq. metre per hour. The differences between the age groups are statistically significant. Since this relationship between age and metabolic rate may be of fundamental importance it behoves us to examine it very carefully before accepting it at its face value. We may believe that the average B.M.R. of 100 men in the age group 60–70 is lower than that of a similar number of men aged 30–40. But, even though gross disease be excluded, a group of 100 men may be expected to include some with pathological changes not detectable by anything short of a most rigorous clinical examination—and perhaps not even then. The number is likely to be greater among the old than among the young. Is, then, the lower average B.M.R. of the older men due not to their greater age *per se* but to the greater incidence of pathological changes which may occur at any age but are commoner among the old? This is, of course, a difficulty of interpretation which must occur in any measurement comparing the old and young when the subjects are chosen only as "apparently healthy." It is obviously a serious difficulty and one which must be faced if we are to disentangle the changes inherent in the ageing process from those due to coincident disease. It is possible to get evidence on this point. In a small number of individuals the B.M.R. has been measured at frequent intervals over a considerable number of years. In two such cases the measurements extended roughly from age 40 to 60, during which period there were no more than inconsiderable changes in height and weight; in both the B.M.R. was significantly lower at 60 than at 40, though both individuals remained in good health. In a third case, over approximately the same period, the B.M.R. did not fall, and in this case the body weight was greater and the general

* Lecture to the Postgraduate Class of Internal Medicine, Edinburgh, June 10, 1947.

health was better at 60 than at 40 years of age. These results, though one would have preferred them from a greater number of cases, undoubtedly support the view that the B.M.R. is an expression of "vitality" and that in the absence of detectable disease it decreases appreciably in later life.

If, then, we accept the view that the observed decrease in the B.M.R. is an expression of the process of senescence, some at least of the other changes which have been reported may be related to it. For if the total energy production is decreased, a decrease in energy usage for certain of the individual processes must be postulated—there must be reduced activity in some of the directions in which energy is expended. Thus, although the secretion of gastric juice is not strictly a "basal" activity, the reduced cellular metabolic rate in old age may well be associated with the much greater incidence of hypochlorhydria (or even achlorhydria). It is stated that whereas achlorhydria occurs in about 4% of young adults it is found in some 30% of persons over 60—and one cannot imagine this phenomenon being accounted for by a differential death rate in favour of achlorhydrics.

Other Changes

Similarly, we might consider the lowered rate of energy production as contributing to the change in glucose tolerance which appears to accompany old age. The range of the response to the ingestion of 50 g. of glucose is very different for young adults and for old. The old usually show a blood-sugar maximum later (and higher) than the young, and the subsequent fall is slower, so that in many cases the fasting level (itself higher on the average than that of young people) is not attained within the usual period of two hours. It is by no means unusual for the blood-sugar curve to be such that in a young person it would be regarded as frankly diabetic—and this in the complete absence of any of the symptoms indicative of diabetes. Apart from the question obviously raised—What is diabetes?—these findings could be explained on the supposition that in old age both absorption of glucose from the alimentary tract and glycogen formation have become less efficient, and, since both these processes involve the expenditure of energy, they could be regarded as associated with the more sluggish metabolism expressed in the lowered B.M.R. It is true, however, that other interpretations of the tendency towards reduced glucose tolerance are possible, and we shall have occasion later to refer to at least one of these.

Again, decreased metabolic activity may be considered a causative agent in the decreased concentration of plasma proteins which, with the expected accompaniment of an increased blood sedimentation rate, has been found in old age.

Some of the changes which have been reported as accompanying old age are almost certainly not factors in the process of "growing old"—that is, in the essential involutionary processes—but are a statistical result of the more frequent occurrence among old people of diseases which may be found at any age. For example, it has been stated that the plasma non-protein nitrogen tends to rise in old age, that (as one would expect if the preceding statement were true) the blood urea is also raised, and that the urea clearance diminishes. Examination of the data shows, however, that there is no general progressive change of the blood urea or the urea clearance with increasing age; there is a tendency for the blood urea to be more often increased above the average for young people and for the urea clearance to be more often decreased. The "spread" becomes greater, suggesting strongly that the data merely express the increasing frequency of renal functional impairment. Nevertheless, the very fact that renal failure and other "pathological" changes are much commoner in the aged than in the young indicates that, secondary though they may be to the fundamental changes involved in ageing, they may be closely bound up with those changes. Detailed examination of such functional disturbances and their age distribution might well yield valuable contributions to the solution of the major problem. The more information we can gain of the changes in old age, whether they form part of the essential process of ageing or whether they are secondary to these, the nearer we shall come to fitting together our jigsaw puzzle.

Nutritional Problems

In any comprehensive study of the ageing process nutritional problems must have an important part. We know a certain amount (though less than would sometimes appear) about the nutritional requirements during the period of growth. We know less about the requirements in later life. This is partly because growth itself is a phenomenon so obvious and easily measured that nutritional studies are much easier during that period than in adult life, when the criteria of good nutrition are difficult to define. Partly it is due to the impression that proper nutrition during the growth period presented a problem more urgent than that of nutrition in adult life, when, superficially at least, there seems to be greater tolerance of dietary variations. There are, however, some suggestions that more intensive investigation is required of the nutritional environment ideal for later life. Nor ought we to forget that senescence and growth are intimately related: a famous aphorism has it that senescence begins at birth.

Determination of the vitamin content of tissues has been possible for only a few years (and the results must still be accepted with caution), but there are indications of changes associated with age, although so far these have been demonstrated only by comparison of adult animals with young growing animals and with embryos. Extension of such investigations to old age is required, with further work on the influence of the nutritional environment on the tissue content of vitamins.

It has been shown in rats that a diet qualitatively as well balanced as possible but quantitatively insufficient for rapid growth promoted longevity and postponed the changes associated with old age. This, of course, is in keeping with the greater "expectation of life" of middle-aged people who are slightly below the average weight. Are we, then, wrong in providing (or attempting to provide) for our children a diet which not only contains the essential nutrients but is so generous in quantity that it induces rapid growth? A high-fat high-carbohydrate intake (which is in fact provided by any ordinary high-calorie diet) is by no means an unmixed blessing—it is no new idea that overfeeding may be a factor in the causation of diabetes, and various facts support the idea. Much evidence relates atherosclerosis to an excessive intake of fat and, especially, cholesterol; and there are data suggesting that the same factors may be concerned in the production of arteriosclerosis in man. Evidently research on the nutritional environment appropriate to maturity and old age may do much to diminish the incidence of serious metabolic disorders in older people, besides, in due course, contributing to our knowledge of the fundamental processes of growth and ageing. Elimination of disorders attributable to faulty nutrition would, apart altogether from incidental contributions to fundamental knowledge, undoubtedly reduce very considerably the gap between specific and potential longevity and so be of immense practical value.

Rate of Growth

A single-celled organism implanted in a suitable medium multiplies and so grows, the rate of growth continually increasing until a point is reached at which the supply of nutrients becomes insufficient to maintain the rate; thereafter growth slackens and then ceases, and the organism eventually dies from what is, in effect, starvation, or from the accumulation of the end-products of metabolism. Man also grows, and after a period during which growth has apparently ceased he dies. His cells have not lost the capacity for new growth—a wound heals in the aged as in the young, and in animals (rats) rapid growth has been induced at an age beyond the normal life-span by keeping the animals in a state of "arrested development" using a diet deficient in lysine and supplying the missing amino-acid only in extreme old age.

Now the complex and highly specialized organism man would appear to be in the position of the simple organism which is repeatedly transferred to a fresh medium (and so apparently maintained indefinitely in active growth), in that his supply of nutrients is continually renewed by his food and the excretory organs remove the end-products of his metabolism. If this were really so it would be necessary to attribute senescence and death to faulty environment. But the analogy between man and bacteria or fungi is a faulty one, for in the repeatedly subcultured colony we are really dealing with successive generations. It may be that, in man, changes in the intimate structure, which are natural in the sense that they form an essential part of the process of development, are harmful in that they ultimately affect adversely either the access of nutrient material to the cell (where alone metabolism occurs), and conversely the removal of waste products, or the enzyme systems which utilize this nutrient material.

Either of these hypotheses would account for many of the changes which have been reported as accompanying old age—the decreased basal metabolic rate, the tendency to hypochlorhydria, the decreased glucose tolerance, the increased requirements of certain of the vitamins which are concerned in enzymic activity, and so on. Equally, either would account for the increased incidence in old age of diseases which may be ascribed to metabolic disorders of particular organs—as, for example, hypertension may be the result of a failure of kidney metabolism.

Alteration in Cell Surfaces

Whether the process of senescence can ultimately be explained in either of these ways only much further research can tell. In the meantime there are a few "pointers" which indicate that slowly developing changes in the structure (and therefore the permeability) of the cell surfaces may be of fundamental importance. Recent work has suggested that although the cells, both red and white, are present in the same numbers in the blood of old people as of young, they are qualitatively altered in the aged. The red cells, though containing the "normal" amount of haemoglobin with the "normal" oxygen capacity, have, in old age, an altered stability towards hypotonic salt solutions which must be explained as due to alteration in the cell surfaces. These changes can be explained on the basis of a decreased rate of formation of the red cells (which fits the idea of a generalized decrease in cellular activity) and a corresponding decrease in the rate of cell destruction. This implies, in the red cell population at any given time, a greater number of "old" erythrocytes than in the blood of young people. The same suggestion of a lowered rate of cell formation and destruction is implicit in the finding that in the blood of aged people there is a tendency to an increased number of multilobular polymorphonuclear cells. This amounts, as has been said, to no more than a "pointer," but it is one that is well worth following.

Were some change in the structure of cell surfaces demonstrable as an invariable concomitant of senescence, we should need much more knowledge than we now possess of this structure, and of the factors which influence it, before we could hope to delve further into the mysteries of senescence or to control it. We would have to be on our guard against ascribing too much to changes in the concentration of any one substance at the cell surfaces: any fundamental structural and functional changes there *may* be due to the alteration of a single constituent, but they may equally be of multiple origin. That structural changes do occur is suggested not only by the indirect evidence already outlined but by more direct evidence. Thus it has been demonstrated for certain plant leaves that, with increasing age of the leaf, electrical stimulation causes more calcium to leave the cell cortex and appear in the vacuole. (The conclusion was reached that with increasing age more calcium is concentrated at the cell surfaces, and the hypothesis was advanced that this, altering the permeability, favours the accumulation of toxic metabolites and so senescence.) In animal tissues, too, histological methods have been claimed to show increasing accumulation of calcium at the cell surfaces.

Conclusion

In this incomplete, and indeed sketchy, outline of some of the biochemical problems of senescence I have tried to indicate the kind of evidence which exists, the difficulties of interpreting it, and some of the directions which may profitably be taken by research. That the problems are complex is clear, but they are much more complex than would appear from this survey. For man, with his highly differentiated structure, is, in a sense, not one organism but many. His various tissues grow at different rates, in different ways, and, with different environmental demands, they age differently.

In research into the processes of ageing we must be clear as to our objects. One, of course, is the pursuit of knowledge for the sake of knowledge. Another is the application of such knowledge as we may gain. But our aim here is not merely to prolong life in terms of years; as has been wittily said: "It is for science not only to add years to life but, more important, to add life to years." There is the crux of our problem—so to *control* senescence that man's period of useful healthy life is prolonged, whether or not we succeed in increasing his total life-span. And I venture to suggest that such control will come, partly no doubt through study of the many degenerative diseases which more frequently affect the old, but chiefly and most completely through studies of the fundamental processes of cell metabolism and the effect of the nutritional environment on them. Among these latter studies an important place must be given to the problem of the structure and mechanism of the cell surfaces.

The Secretary of the Department of Health for Scotland, Sir George Henderson, speaking at the Annual Conference of the Scottish Association of Insurance Committees recently, said that there was no intention of setting up a huge bureaucratic machine to run hospitals as appendages of St. Andrew's House. The Secretary of State intended to leave the administration of the new hospital system in the hands of local people. New hospitals would be sited for maximum use of the widest area and not by accident of charity or the financial resources of a local authority. He hoped that out-patient departments would be so organized as to avoid the long queues which were common to-day. Under the National Health Service the work of the old insurance committees would be taken over by Executive Councils, which would represent the whole community and not simply the present insured population. By regrouping the areas covered the work of 54 insurance committees would be done by 25 Executive Councils.

AN APPARATUS FOR DRAINAGE OF A TEMPORARY ILEOSTOMY

BY

R. M. T. WALKER-BRASH, B.M., B.Ch.

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The apparatus here described was devised in an effort to relieve the intolerable unpleasantness of a temporary ileostomy, but it is easily adaptable for the treatment of other digestive fistulae. An ileostomy discharges fluid or semi-solid products almost continuously over the abdominal wall, causing marked soreness and superficial ulceration of the skin despite the use of protective pastes. After several attempts the following means were adopted to control this secretion.

Method

The skin around the ileostomy is smeared with a suitable ointment; a mixture of castor oil and zinc cream is very satisfactory. Over this is placed a layer of lint or petroleum-jelly gauze which fits neatly round the stoma. Over the whole is fixed an ordinary Irving box. Through the hole in the lid of the box a small-bore right-angled glass tube is strapped. This is placed directly over the stoma, with a clearance of about 3–4 mm. from the mucous membrane. The distal end of the tube is attached to a suction pump, which works night and day. By this means any quantities of fluid secretion or semi-solid material are aspirated as they appear in the lumen of the ileostomy. If a large solid motion occurs the lid of the box is removed by the patient and separated from the suction-tube, which can then be swept freely round the inside of the box until all the material is aspirated. At no time, therefore, is any quantity of irritating secretion left in contact with the skin of the abdomen.

The advantages of the apparatus are: (1) The skin is protected from the persistent discharge and there is no leakage to the back or groins however profuse the secretion may be. (2) No frequent changes of dressings are required, thereby giving minimal disturbance to the patient at all times and lessening the work of the nursing staff. At night the box is inspected hourly by the night nurse, and if a large motion has occurred it is aspirated as described above without waking the patient. (3) The patient, reclining comfortably against a suitable number of pillows, is in the best position from the point of view of post-operative treatment and general nursing. (4) The method entails the use of only such simple apparatus as is found in any general hospital.

FIG. 1

The Apparatus in Use

The apparatus was developed in a case of acute intestinal obstruction, for which was established an ileostomy that could not be closed for three months owing to severe general peritonitis. After the operation the skin rapidly became sore, and remained so despite all remedies. Postural drainage was out of the question owing to the grave condition of the patient. However, when the Irving box was applied the skin steadily healed. The efficacy of the apparatus was demonstrated on two occasions when there was an electrical breakdown in the suction pump and soreness of the skin developed in twelve hours.

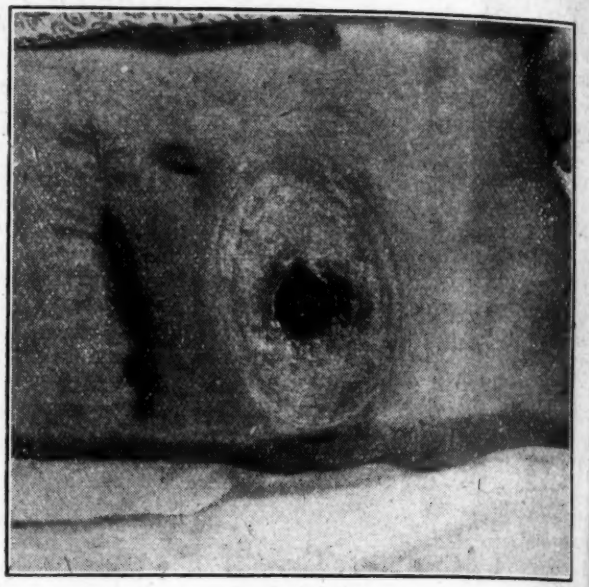

FIG. 2

Fig. 1 shows the Irving box, suction-tube, and lint *in situ*. The lid of the box has been removed for the sake of clarity. Fig. 2 shows the condition of the skin at the end of three months. There are areas of redness, but none of ulceration. The ulceration on the right of the abdomen is a result of the infection of the laparotomy scar from the peritoneal cavity.

My thanks are due to Mr. John Hosford for permission to publish this paper; to Dr. B. Wells for the photographs, to Miss E. C. Ha for the development of the apparatus, and to Miss "G." fo criticism and co-operation in its use during a long and trying illnes

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The Convalescent Homes Committee of the King Edward Hospital Fund for London has recently prepared a *Directory Convalescent Homes*. The Directory is attractively bound loose-leaf form and from time to time further pages will issued. Over a hundred convalescent homes in the Ho Counties area are already listed and details are given of oth homes further afield. Each entry gives all the information th is available about a particular home, including notes on the da routine, recreation, staff, number of beds, and charges. There three indexes: the first is an alphabetical list of all homes; second groups the homes according to whether they admit me women, or children; and the third index is arranged according the type of case with details of the various qualifications wh apply to patients seeking admission—religion, profession, place residence, and so forth. The initial fee of 5s. for the *Direct* entitles subscribers to all additional pages and amendments u January 1, 1950. Further information may be obtained from Convalescent Homes Committee, King Edward's Hospital Fund London, 10, Old Jewry, London, E.C.2.

SIX CASES OF CARDIOVASCULAR DISORDER WITH PERIPHERAL NEURITIS

BY

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AND

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Six cases were chosen from among many men suffering from a common complaint in a P.O.W. camp in Siam. Typical was a healthy-looking young male who complained of breathlessness on walking on the level, palpitation, and occasional precordial pain. The symptoms resembled those of effort syndrome. A history of malaria (several attacks), diarrhoea, or nutritional oedema was obtained, but none of diseases predisposing to cardiac disorders. There was no advantage to be gained by malingering at this period, nor was there any evidence of hysteria.

Before Thiamine

On examination, tachycardia, abnormal increase of pulse rate on rising from the recumbent position, tumultuous heart action, some impurity of the mitral first sound, a pistol shot sound over the femoral artery, and carotid sinus irritability could be found. No cardiac enlargement, oedema, or anaemia was detected. The standard exercise tolerance test gave normal results in spite of dyspnoea on walking. Reduced sensibility of peripheral distribution to pin-prick and deep pressure, with sluggish reflexes and slight Rombergism, constituted the common neurological findings. Routine physical examinations were recorded and disease of other systems excluded (detailed case records are available).

The following investigations into the autonomic system were carried out and repeated after treatment with thiamine: the response of the recumbent pulse rate to atropine and pilocarpine (on separate days); ciliary fatigue time; ergograph tests on skeletal musculature; carotid sinus irritability; dermographia.

Before treatment with thiamine, pilocarpine 1/5 gr. (13 mg.) subcutaneously increased the pulse rate in 4 cases (average increase, 16 per minute), and did not alter it in 2. The effect of atropine 1/40 gr. (1.6 mg.) was inconclusive (pulse rate was reduced in 1 case, increased in 2, unaltered in 3).

After Thiamine

Each patient was then treated with thiamine, 17,000 units being given by intramuscular injection in a period of 13 days. During treatment the men were allowed to be up and about, and no change was made in their habits, occupation, or diets.

After this treatment pilocarpine increased the pulse rate in all 6 cases (average increase, 14). Atropine reduced the pulse rate in all 6 (average decrease, 14).

The stability of the vasomotor control was increased as shown by the results of injections of pilocarpine and atropine. Apparently at the high atmospheric temperature prevailing in Siam the effect of pilocarpine is to increase the pulse rate owing to reduced blood pressure secondary to vasodilatation. Atropine has the opposite effect. The side effects—salivation, dryness, etc.—indicated that there was no error in the use of the drugs.

A fall in the recumbent pulse rate, varying from 14 to 28 per minute, occurred in 5 out of the 6 cases. The sixth remained stationary at 80. The discrepancy between recumbent and upright pulse rates fell from an average discrepancy of 16 to 8 in 5 out of 6 cases.

Abnormalities in physical signs in the heart showed improvement in 4 out of the 5 cases showing them. The pistol shot sound in the groin in the recumbent position disappeared in 2 cases, was greatly reduced in 3 cases, and remained unaltered in the remaining case. Carotid sinus irritability disappeared in 2 out of 3 cases. Ergograph experiments showed improvement in all cases ranging from 68% to 800%. Ciliary fatigue time tests showed improvement in 5 cases, ranging from 33% to 500%. The sixth could not see the text and could not be tested. (The eye disturbances form the subject of a separate paper.) Examination of the C.N.S. gave evidence of partial return of the reduced function of the peripheral nerves in all 6 cases. No characteristic changes could be detected in the blood pressures, which were all normal.

Breathlessness was greatly reduced in all 6 cases. Precordial pain was reduced or abolished in 4 out of 4 who had complained of it. Palpitation was reduced or abolished in 4 out of 4. Sleep improved in 5 cases. Nocturnal frequency of micturition was reduced in 3 out of 6 (urine more concentrated in 5 out of 6). Frequency of bowel action was reduced in 2 out of 2. Appetite increased in 1 case, diminished in 1. Headaches were abolished in 2 out of 2. The improvement in symptoms began after the third injection.

	Case 1 (J. E. B.)		*Case* 2 (G. B. S.)		*Case* 3 (A. R. H.)		*Case* 4 (H. H.)		*Case* 5 (R. B.)		*Case* 6 (D. E. S.)	
	Before Thiamine	After Thiamine	Before Thiamine	After Thiamine	Before Thiamine	After Thiamine	Before Thiamine	After Thiamine	Before Thiamine	After Thiamine	Before Thiamine	After Thiamine
Recumbent pulse rate	92	74	84	70	112	90	84	56	92	64	80	82
Discrepancy between upright and recumbent pulse rates	16	8	20	26	12	6	18	10	14	10	20	6
Pulse rate after pilocarpine 1/5 gr.	+6	+8	No change	+10	+26	+10	No change	+20	+8	+14	+24	+20
Pulse rate after atropine 1/40 gr.	No change	−8	+10	−10	No change	−28	−6	−6	+8	−14	No change	−18
Ciliary fatigue time ..			1¼ min.	8 min.	3 min.	4 min.	3 min.	5½ min.	4 min.	10½ min.	5 min.	25 min.
Pistol-shot sound ..	+++	+	++	++	+++	+	++	+	++	−	+++	+
Ergograph test carried to standstill	87 strokes in 2½ min.	260 strokes in 6 min.	100 strokes in 3 min.	206 strokes in 5 min.	89 strokes in 2 min.	400 strokes in 2 min.	65 strokes in 2 min.	122 strokes in 3 min.	164 strokes in 4 min.	350 strokes in 6¼ min.	20 strokes in 40 sec.	226 strokes in 4¾ min.
Carotid sinus irritability	+	+	−	−	++	−	−	−	−	−	+	−

It was felt that the dosage of thiamine had been inadequate, but supplies were very restricted.

Conclusions

Thiamine benefited cases of a syndrome of cardiovascular derangement resembling effort syndrome with peripheral neuritis.

There was a disturbance of the autonomic system which appeared to be corrected by thiamine.

Medical Memoranda

Hypertension and Nephrectomy

Ever since Goldblatt demonstrated that hypertension could be produced experimentally by unilateral renal ischaemia, the hope has been present in the minds of physicians that some cases of hypertension would be amenable to treatment by nephrectomy. It was obvious that the necessary condition of a localized silent kidney lesion was not common, and the prospects of operative cure are correspondingly less so. Nevertheless, during the past ten years cases of pyelonephritis and hydronephrosis, and even of renal tuberculosis and neoplasm, have been reported as causing hypertension which was cured by this operation. Some American writers have suggested that 1 in 200 of all cases of hypertension fall into this category, but English opinion tends to regard this as over-optimistic. Ratcliffe, Nesbit, Plumb, and Bohne (*J. Amer. med. Ass.*, 1947, **133**, 297), reviewing pyelograms on 2,055 hypertensives in the University of Michigan Hospital, found nephrectomy indicated in under 5%. Cases of hypertension found in members of the Armed Forces, being young and otherwise fit, would appear a suitable field for seeking such surgical opportunity. The following case report suggests that the search is worth while.

Case History

On Nov. 7, 1944, a W.A.A.F. non-commissioned officer aged 27 was admitted to hospital with a history of headache and vomiting for eight months. The headache was worse in the mornings. There had been a slight loss of weight, but no other symptoms, in particular no urinary symptoms. Examination showed a normally developed girl with a forcible pulse and a blood pressure of 250/160. The apex beat was not palpable, the femoral pulses were easily felt, and the fundus oculi showed hypertensive change, in that the arteries were narrowed to fine threads. There was some white exudate but no haemorrhages. It appeared to me that early papilloedema was present, though on subsequent reflection I am not disposed to be definite on this point. She had no recollection of any previous illness, and her records showed that at a routine examination eleven months earlier her blood pressure was noted as 120/70. Experience has taught me, however, that the results of routine examination are not a suitable basis for scientific deductions.

Investigations.—The urine showed a cloud of albumin and a moderate number of red cells, but no casts. A radiograph of the chest revealed a heart at the upper limit of normal and a dilated aorta. An intravenous pyelogram showed a normal left kidney but no secretion on the right. Retrograde pyelography by Squadron-Leader Gordon Lennon, surgical specialist, was reported on by Flight-Lieutenant Donnelly, radiologist, as follows: "A large hydronephrosis is present on the right side. It is of the combined intra- and extra-renal type. The right ureter appears normal. Most of the dye was retained in the pelvis five minutes after injection, suggesting a valvular action at the pelvi-ureteral junction. The above indicates that the hydronephrosis has been caused by an aberrant renal artery." The blood urea was 20 mg. per 100 ml. and the urea clearance was 118.5% of average normal (van Slyke).

Progress.—After a month in bed her blood pressure had fallen to 170/130 and was obviously going no lower. The consultant in surgery (Air Commodore Hall) and Squadron-Leader Lennon agreed that nephrectomy was indicated, and on Dec. 13 this was performed by the latter. Some difficulty was experienced in mobilizing the kidney, which was represented mainly by a hydronephrotic sac. Nothing untoward occurred, however, and on the day after operation her condition was excellent, with a blood pressure of 190/140. During convalescence she remarked that all headache and feeling of discomfort had gone, and that she felt well for the first time for many months. On her discharge from hospital on Jan. 8, 1945, her blood pressure was 170/115. Three months later her health was excellent, the urine free from albumin or other abnormality, and the fundus oculi normal. Her blood pressure, however, continued to range around 180/130. It was obvious that restoration to normal had not occurred, and probably would not do so, but there was no doubt that she had been changed from an extremely sick young woman to one capable of enjoying all ordinary activities. In November, 1946, she was living a normal life free from symptoms, with a blood pressure of 165/105 but no other detectable abnormality. When last seen in July, 1947, her condition was the same.

Discussion

By far the greatest number of cases of alleged hypertension referred to me from Service units were not hypertensive by ordinary standards. They represent an emotional rise of blood pressure associated with medical examination which reverts to normal when the patient is put at ease with the examiner. A few, however, as in the case quoted, have an undeniable hypertension. If surgery is to be considered, the most convenient preliminary investigation of such cases is pyelography, since biochemical renal function tests, though useful later, do not give the needed information as to the anatomical distribution of the lesion. In dealing with large numbers of cases it saves time if the most selective procedure is done first. Of 30 genuine cases of hypertension that I dealt with unilateral kidney damage was found in two. The progress of one is recorded above. That of the other was cut short, after a successful operation for removal of an atrophic kidney, by an unrelated fatal illness.

C. P. Petch, M.B., M.R.C.P.,
Late Wing-Commander, R.A.F.V.R.

A Complication of Birth Control

The following case report draws attention to a practice that may be gaining in popularity.

Case Report

The patient, an intelligent married woman aged 31, was admitted on May 25, 1947, from the casualty department, having passed a clinical thermometer into the bladder via the urethra. She complained of slight lower abdominal discomfort, and there was a small quantity of blood in the urine; she passed urine without difficulty but had some discomfort at the end of micturition. The accompanying skiagram shows the thermometer lying transversely across the bladder.

The thermometer was easily visualized by cystoscopy, and the temperature was seen to be 100.5° F. (38.05° C.). The patient

was put in a partial Trendelenburg position and the smallest-size infants' proctoscope was passed through the urethra. Eve's nasal snare was placed round the constriction of the bulb of the thermometer, which was then extracted. There were no subsequent urinary difficulties, and the patient was discharged on the following day.

The explanation of this occurrence is as follows. The patient had read in a magazine of the so-called "safe period" method of birth control and the relation between the time of ovulation and a variation of vaginal temperature, and she was keeping a daily chart of that temperature. For ten mornings this had shown little change. On the eleventh day she carelessly passed the thermometer into the bladder. If this practice is becoming more common, the provision of a specially designed thermometer with flange or handle would seem desirable.

John Hankinson, M.B., B.S.,
St. Mary's Hospital, W.2.

Reviews

"NOVAK"

Gynecological and Obstetrical Pathology. With Clinical and Endocrine Relations. By Emil Novak, M.D., D.Sc., F.A.C.S. Second edition, revised. (Pp. 570; 542 illustrations, 15 in colours. 37s. 6d.) Philadelphia and London: W. B. Saunders Company. 1947.

Good clinical work is based on a sound knowledge of physiology and pathology, a fact especially true of gynaecology. The relationship is admirably brought out in this book, which is perhaps the chief reason for the enthusiastic welcome accorded the first edition in Britain and for its continued popularity. It is interesting to read, simple and clear as well as informative. It has become a standard book which most gynaecologists and pathologists not only possess but refer to constantly. Those studying for higher examinations pin their faith on it. Not the least of its attractions is that although it is fairly comprehensive it is not too detailed for those whose interests are mainly practical. The author provides a few important references for those wishing to delve more deeply into any subject. The book in its original form is so well known—indeed in Britain it is usually called "Novak" without regard for other books by the same author—that it seems hardly necessary to describe it in detail. The second edition conforms closely to the first in subject-matter, style, and layout. The increased size is largely due to additional illustrations; there are nearly as many of these as pages, and excellent they are too. The author has taken care to bring the text thoroughly up to date, but has wisely avoided any attempt to make the book "exhaustive or encyclopaedic." Had he done the latter much of its charm would probably have been lost. The obstetrical section is still strictly limited in its scope.

It is doubtful whether anyone without the special qualifications of Dr. Novak could have written this book, for he is a practising gynaecologist with a wide experience and interest in pathology and endocrinology. One small adverse criticism is of the author's use of the terms vaginal and vulval *mucosa*. It is a common enough error, but it is surprising that it should be perpetuated by one of Novak's undoubted authority.

T. N. A. JEFFCOATE.

MEDICINE INTEGRATED

An Integrated Practice of Medicine. A Complete General Practice of Medicine from Differential Diagnosis by Presenting Symptoms to Specific Management of the Patient. By Harold Thomas Hyman, M.D. In four volumes with separate Diagnosis and Subject Index. (Pp. 4,621, with 1,184 illustrations, 305 in colour, and 319 tables of Differential Diagnosis. Complete set £12 10s.) Philadelphia and London: W. B. Saunders Company. 1947.

"If," the editor explains in his preface, "this book fulfils the requirements for which it has been devised, it should be possible for the practitioner, after taking the history and performing the physical examination, to turn to the Index of Differential Diagnosis, obtain a reference to the needed Tables of Differential Diagnosis, establish a definitive diagnosis or be guided to additional examinations and tests by which the diagnosis can be established; and then prepare a therapeutic routine to include symptomatic, specific and prophylactic therapy for the relief or cure of the abnormal manifestation concerning which his patient has consulted him." The book is thus an attempt to substitute for the complex mental processes by which diagnosis is achieved a mechanical device which supplies the diagnosis and "therapeutic routine" when applied to the "facts" of history and physical examination. Such a procedure reduces medicine to the status of a cross-word puzzle, a mechanistic ambition curiously at variance with the author's avowed objective of focusing "consideration on the human patient as a biologic unity."

Although the author in his prolegomena appears to stress the individuality of the patient, while tacitly denying that of the doctor, it is doubtful whether this attitude reflects either American practice in general or that of Dr. Hyman in particular. The book displays the breadth of Dr. Hyman's interests and the depth of his knowledge, for he considers the whole of general practice and, in addition, the special subjects and minor and emergency major surgery. He describes the methods of physical examination and the simpler laboratory tests, lists the occasions when a second opinion should be taken, and gives a glossary of haematological terms. It is in writing of prognosis and of how to start in general practice that Dr. Hyman reveals a humanism which belies the mechanistic claims of his preface.

This massive work contains much information, and its unusual homogeneity suggests that the editor is at least part author of all its 4,000-odd pages. It would be hard to overestimate the labour involved in making this vast compilation. The book is addressed to the American general practitioner, whose professional existence must differ from that of his counterpart in Britain, and we therefore doubt whether it is a sound investment for the general practitioner in this country.

R. BODLEY SCOTT.

TOMOGRAPHY

A Manual of Tomography. By M. Weinbren, M.R.C.S., L.R.C.P., F.F.R., D.M.R.E. (Pp. 270; with 138 figures comprising 397 illustrations. 45s.) London: H. K. Lewis and Co. 1946.

The author of this book is experienced in tomography and obviously an enthusiast. After a short introduction he considers tomography of the chest, the spine, the skull, the larynx, and miscellaneous conditions. His discussion of chest tomography is clear and complete. In the chapter on the spine, which is, curiously, the largest in the book, he explores the subject, recording the use of tomography for conditions in which it has so far been little used. He clearly demonstrates its value in some cases; in others the standard radiographic methods show the lesion equally well; and in one or two, judging by the illustrations, the tomographic method seems to be inferior, though this appearance may be the result of reproduction. This section is instructive for its account of the possible uses of tomography in obscure lesions of the spine and pelvis. The author records its value in compression fractures of the dorsal spine, especially in the cervico-dorsal region, where satisfactory lateral views cannot be obtained by ordinary radiography.

Tomography is particularly useful in spondylitis and spondylolisthesis, where it is often difficult to show the defect in the pars interarticularis, and in fracture dislocations for revealing the relations of the articular processes. For examining the healing of fractured vertebral bodies, the progress of Pott's disease, fractures of the odontoid process, and spinal metastases the author shows that tomography is sometimes effective. He has successfully used tomography for investigating various lesions of the skull and facial bones, including fractures, sinus infections, and intracranial and eighth nerve tumours. In a miscellaneous section he describes the tomographic appearances in lesions of the sternum, limb joints, gall-bladder, and kidney. When gas obscures the picture in cholecystography and intravenous pyelography, tomograms may clearly reveal the contrast filling.

This book, which has a good bibliography, will be of great interest to all who employ tomography, for it indicates how various are its applications and suggests further extensions of the method.

S. COCHRANE SHANKS.

SURGERY OF DIABETES

Le Chirurgien en Présence de l'Etat Diabétique. By Jacques Bréhant. Preface by Prof. Sénèque. (Pp. 544; 44 figures. 1,200 francs). Paris: Masson et Cie. 1946.

This book is mainly based on the author's experience before and during the recent war. In the first section he discusses what a surgeon ought to know about the treatment of diabetes. He uses the French classification of diabetes into, without, and with loss of weight, but advocates the use of large doses of insulin for all the serious surgical complications. The most important section is that describing the diseases of the legs and toes. He describes three main types—vascular, infective, and trophic. He fully considers the value of sympathectomy in these cases and points out that if a good response to the injection of procaine into the lumbar sympathetic has been obtained and the condition of the toes is stabilized lumbar sympathectomy is indicated. He strongly advocates using a Pachon oscillometer in determining the site of amputation. He describes successful local amputations of toes and metatarsus and the ideal and unsuitable sites for amputation.

Although he mentions penicillin it is usually in conjunction with sulphonamides—probably because the book was written during the war, and before penicillin was available. Its use may cause him to alter his views considerably about the best time to operate. Discussing whether trauma causes diabetes mellitus, he quotes the evidence of de Laet, Labbe, and Joslin, who believe that it does not, and sets it against that of Rathery; he concludes that, though it can be only an exceptional occurrence, it does. The arguments are not very convincing. The rest of the book contains a short description of most of the other surgical diseases in so far as they are modified by diabetes. There is a good index.

GEORGE GRAHAM.

REMINISCENCES

János. The Story of a Doctor. By John Plesch. Translated by Edward Fitzgerald. (Pp. 579: illustrated. 18s.) London: Victor Goliancz. 1947.

John Plesch has enjoyed a life of unusual variety. Born in Budapest in 1878, he was for more than twenty years a leading physician in Berlin, but when the Nazis took over he was one of the first fugitives to arrive in England to begin a new career. His practice in a second alien capital was rapidly and remarkably successful; indeed it was, as he writes, "something of an event." His christian name gives his book its title, and this is characteristic of his expansive personality. The eminent in art, science, and politics crowd into his book as they might jostle one another at an ambassador's cocktail party. All these diverse characters have enjoyed his friendship, for János, with disarming catholicity, is moved by the simple and massive integrity of such men as Einstein and yet is not unaware of the "fabulous leg" of Marlene Dietrich, "in a wonderful silk stocking visible well above the knee." The two chapters on Einstein are the most important in the book, and, for medical readers, his reminiscences of such scientific figures as Wassermann, Schaudinn, and Ehrlich are of great interest.

He is obviously a physician who brings to his patients a genuine humanity, and the only criticism of his English colleagues which he allows himself is that they incline towards a harsh and dogmatic prognosis. His advice is, "think pessimistically and act optimistically." He caricatures his own counsel, however, in an incident he relates on another page, when, having been called to St. Petersburg to the death-bed of a beautiful Russian actress, he "fought that day as I have rarely had to fight. As soon as a medicine failed to produce a response from the sinking organism, stronger methods had to be tried. Everything possible was done, and everything depended on the two finger-tips that controlled the failing pulse. Death was delayed for twelve hours, and at the end of that time I broke down myself and wept, the relaxation of tension was so violent."

János concludes with advice on such subjects as food, fatigue, slimming, exercise, surgery, constipation, homosexuality, and the natural position in coitus. These dialogues will be more nourishing to the layman than to the medical man, but they disclose an attitude to such problems which is characteristically European—realistic, intelligent, and humane. In short this book, while by no means another *San Michele*, is, as the Sunday reviewers say, worthy of the library list.

D. V. HUBBLE.

Pharmaco-Therapeutic Notebook, by H. W. Tomski (London: Baillière, Tindall and Cox; 15s.), is intended for the pharmacists "who served in the Forces and have lost contact during the war with professional pharmacy," and also for the general practitioner. It gives concise information on drugs used in modern practice. These appear under alphabetical headings such as anaesthetics, analgesics and antipyretics, circulatory and respiratory stimulants, diuretics, hypnotics and sedatives, purgatives, etc. The book consists of comprehensive lecture notes, and does not replace but supplements textbooks and pharmacopoeias. It includes commonly used prescriptions for some drugs and a chapter on substitution therapeutics. There is a good index.

M. A. Kamath's *Ophthalmic Surgery and Sight-Testing*, a first edition of which appeared in 1926, is an elementary exposition of the common ophthalmic conditions; in spite of its name the author does not unduly stress surgery and sight-testing. The features that he emphasizes, based on Indian experience, are rather different from those generally observed in European textbooks. Copies may be obtained from the author at Planter's Lane, Mangalore, South Kanara, South India.

BOOKS RECEIVED

[*Review is not precluded by notice here of books recently received*]

Mothercraft in Pictures. Compiled by M. Maslem Jones, S.R.N., S.C.M., M.T.S. (7s. 6d.) London: Faber and Faber. 1947.

A series of photographs illustrating care of the baby.

Radium Dosage. The Manchester System. Edited by W. J. Meredith, M.Sc., F.Inst.P. (Pp. 124. 15s.) Edinburgh: E. and S. Livingstone, Limited. 1947.

A collection of papers on mould, intra-cavitary, and interstitial gamma-ray therapy.

The Social and Legal Aspects of Sexual Abnormality. By Edward Glover, M.D. (Pp. 16. 1s.) London: The Institute for the Scientific Treatment of Delinquency. 1947.

A brief account of sexual perversion in relation to the law and society.

Personal Mental Hygiene. Dom Thomas Verner Moore, O.S.B., M.D., Ph.D. (Pp. 331. 21s.) London: William Heinemann. 1947.

The author presents "various attitudes of mind, ideals, and principles which may be of value to the individual confronted with the difficulties of life."

The Head, Neck, and Trunk. By Daniel P. Quiring, Ph.D. (Pp. 115. 14s.) London: Henry Kimpton. 1947.

Diagrammatically illustrates the muscles of the head, neck, and trunk, with their chief arterial and nerve supplies.

Radical Surgery in Advanced Abdominal Cancer. By Alexander Brunschwig, M.D. (Pp. 324. 42s.) Chicago, Illinois: The University of Chicago Press. Great Britain and Ireland: Cambridge University Press. 1947.

An account of the author's operations on 100 cases of advanced malignant disease.

Kompendium der Parasitischen Würmer im Menschen. By Dr. Hans A. Kreis. (Pp. 136. 10 Swiss francs.) Basle: Benno Schwabe and Co. 1947.

A brief account of worms parasitic in man.

Vegetative Funktionen und Zwischenhirn. By Dr. W. R. Hess. (Pp. 65. 12 Swiss francs.) Basle: Benno Schwabe and Co.

A monograph, based on the author's experiments, on the vegetative functions of the mid-brain.

Das Auge als Subjekt das Wahrnehmungsbild und Seine Prüfung. By Dr. Fritz Rössler. (Pp. 190. 60 Swiss francs.) Vienna: Verlag Wilhelm Maudrich. 1947.

Examination of the eye by subjective methods, with particular reference to the cobalt lamp.

Inter-Allied Conferences on War Medicine Convened by the Royal Society of Medicine 1942–1945. Edited by Major-General Sir Henry Letheby Tidy, K.B.E., M.D., and J. M. Browne Kutschbach, M.B., B.Ch., D.P.H. (Pp. 531. 50s.) London: Staples Press, Limited. 1947.

Communications delivered at conferences held by the Medical Services of the Allies.

Electronics and their Application in Industry and Research. Edited by Bernard Lovell, O.B.E., B.Sc., Ph.D. (Pp. 660. 42s.) London: The Pilot Press, Ltd. 1947.

Includes accounts of radar, the use of electronics in medicine and physiology, and electron-microscopy.

The Art is Long. By William Edwards. M.D. (Pp. 159. 10s. 6d.) London: Andrew Melrose, Ltd.

Describes for the layman the activities of medical men in general and specialist practice.

Nursing. By L. K. Wolf, R.N., B.S., M.P.H. (Pp. 534. $3.50.) London and New York: D. Appleton-Century Company. 1947.

An account of the principles of nursing, with many diagrams.

Biology for Medical Students. By C. C. Hentschel, M.Sc., and W. R. Ivimey Cook, B.Sc., Ph.D. 4th ed. (Pp. 752. 25s.) London: Longmans, Green and Co. 1947.

The authors have largely rewritten this textbook emphasizing physiological aspects of botany and zoology

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TREATMENT OF NEUROSYPHILIS

Since the introduction of syphilis into Europe the incidence of neurosyphilis has markedly increased. It was rare in the early days, but in recent times has become comparatively common among the white though still uncommon among the coloured races. Many theories have been advanced to account for this difference, none of them very convincing. It has been suggested that the therapeutic use of arsenicals was one cause of the increased incidence of neurosyphilis, but it now seems clear that it was the employment of a sub-optimal dosage that was to blame. In the past the treatment of neurosyphilis was most unsatisfactory, since mercury had little or no effect on any except perhaps the very early asymptomatic cases. With the advent of the trivalent arsenicals the position improved, most of the earlier types of neurosyphilis, both asymptomatic and symptomatic, reacting well, though a diagnosis of general paralysis of the insane still remained virtually equivalent to a death warrant. Later, tryparsamide proved considerably more effective than any of the trivalent preparations, but it was Wagner-Jauregg's introduction of malaria therapy which first offered any hope of curing, or at least arresting, G.P.I. Since then many of these patients have recovered sufficiently to be able to lead useful lives over a period of years.

Penicillin has now further advanced the treatment of all forms of neurosyphilis. Elsewhere in this issue (p. 565) Lescher and Richards describe their results in 49 patients suffering from various forms of neurosyphilis; 20 were treated by malaria and chemotherapy, 10 by penicillin alone, and 19 by malaria plus penicillin. The first group was observed for five to eight years; 6 were much improved, 6 improved, 4 remained stationary, and 4 became worse. Cases with meningo-vascular lesions gave the best results—4 of the 5 cases being "much improved." The cerebrospinal fluid became serologically negative in 10 and inactive in 7 of the 20 cases; blood tests gave 10 negative, 6 improved, and 4 positive results. Whelen[1] states that after the malaria treatment of G.P.I. the cerebrospinal fluid usually becomes inactive in six to twelve months and negative in one to three years, after which relapse seldom occurs. Of the 10 cases in the penicillin-treated group, 4 were much improved, 3 improved, 2 stationary, and one patient became worse; serologically their cerebrospinal fluids gave one weak positive, 6 inactive, and 3 negative results; blood tests gave 5 positive, 3 improved, and 2 negative results. Of 19 patients treated in or after 1945 with malaria and penicillin, 9 were much improved, 5 improved, and in 5 the condition remained stationary. The cerebrospinal fluid in these cases showed 1 strong positive, 1 weak positive, 10 inactive, and 7 negative results. There were 11 positive, 2 improved, and 6 negative blood tests, showing that it is much easier to reverse the serological findings in the spinal fluid than in the blood. On the whole the third group showed most improvement, but the numbers were too small for clear deductions to be drawn as to the best treatment for each type of neurosyphilis.

In our opening pages Worster-Drought discusses the value and use of penicillin in the various forms of neurosyphilis and points out that penicillin, arsenicals, and bismuth are probably synergistic, and that a rise in temperature—as by malaria therapy—appears to enhance the effect of penicillin. He tried intrathecal penicillin but was not convinced of its value; it often caused an exacerbation of symptoms, particularly in tabes. Penicillin certainly affected the cerebrospinal fluid, and in some cases the number of cells rose to 10,000 per c.mm. and the protein to 250 mg. per 100 ml.; this might have been due to impurities. The question of the penetration of the blood–brain barrier by penicillin has been much discussed. It is stated that penicillin will pass the barrier if it is given in massive doses or if the choroid plexus is damaged, but the problem is mainly of academic interest, since this antibiotic is undoubtedly carried to the nervous system in the blood stream, and both clinical observation and pathological tests avouch its efficacy. Obviously neither penicillin nor any other remedy can resuscitate dead nerve cells. Penicillin given by cisternal puncture is dangerous, and this method should not be attempted. But when penicillin is given intramuscularly—and this seems the best method, whether it is given in solution or suspended in oil-wax—reactions are negligible. However, Herxheimer reactions are to be feared in patients with neurosyphilis, and Worster-Drought always starts treatment with a few injections of bismuth; urticaria appears occasionally but seldom calls for the cessation of treatment.

Meningo-vascular neurosyphilis responds best to penicillin, and cranial nerve palsies often improve greatly. In cases of G.P.I. the treatment recommended is: four injections of bismuth, 4–5 mega units of penicillin, malaria (twelve bouts of fever), and then three courses, each of twelve injections, of arsenic and bismuth in one year. The Lange curve is the reaction most difficult to reverse. In the treatment of tabes 4–5 mega units of penicillin should be followed by arsenic and bismuth for one to two years; malaria is not recommended, and intrathecal penicillin should be avoided as being likely to increase lightning pains. For optic atrophy treatment by 4 mega units of penicillin, plus malaria, plus arsenic and bismuth is suggested; the same would apply to late asymptomatic cases, and treatment should be continued until the serological tests become negative. Five years is the minimum time over which observation should continue properly to evaluate the effect of therapy.

Koteen,[2] reporting on 111 cases of late neurosyphilis treated with penicillin and observed for twelve to thirty months, suggests that penicillin is superior to "metal chemotherapy" and probably the equal of artificial fever, except in cases of optic atrophy. Of 11 patients with G.P.I., 6 had

[1] *Brit. J. vener. Dis.*, 1946, **22**, 121.

[2] *Amer. J. vener. Dis.*, 1947, **31**, 1.

remissions lasting two years; 4 of the 5 others had deteriorated badly before being treated. In 41 tabetics 33 out of 57 symptoms were favourably affected; and in general the pathological changes in the cerebrospinal fluid showed a marked improvement. Nicol[3] treated 254 men and 180 women, half with malaria only and half with malaria plus tryparsamide, and concluded that the latter form of treatment was superior to the former; this is probably the most important series reported in this country. The patients consisted for the most part of cases of G.P.I., but a few cases of taboparesis, congenital G.P.I., and congenital taboparesis were included. If tests of the cerebrospinal fluid are positive at the end of a year following treatment further treatment is indicated, but if negative on two consecutive occasions at yearly intervals a reversion to positive reactions is extremely unlikely. Speaking in April, 1946, Nicol gave it as his opinion that penicillin will probably replace tryparsamide as an adjunct to malaria therapy.

Kampmeier[4] stresses the need for individual treatment of neurosyphilis; patients with type I cerebrospinal fluids need only routine treatment with arsenic and bismuth, but those with type II or III fluids need long-continued treatment with arsenicals and bismuth, supplemented by tryparsamide and fever therapy if the fluid does not improve considerably after eight to ten months. Both McElligott[5] and Marshall[6] advocate repeated courses of penicillin, and there is much to support their view; it may be that a second or third "blow" is necessary to destroy the last spirochaete, as is the case with arsenicals.

Neurosyphilis cannot be dealt with as a single problem. Early cases with only slight changes in the cerebrospinal fluid, such as occur not uncommonly in the secondary stage, react well to routine treatment. Generally speaking, however, the more marked the changes in the cerebrospinal fluid the more intensive and prolonged should be the treatment. Frequent examinations of the cerebrospinal fluid are necessary to assess the progress of the disease and the effects of treatment. Though clinical improvement by no means always goes hand-in-hand with changes in the cerebrospinal fluid, nevertheless the results of tests of the cerebrospinal fluid are the best guides to prognosis, and if the fluid shows a steady return to normal the outlook is good. It is not to be expected that serious nerve damage can be repaired, but it can usually be arrested by energetic treatment of the right type, though many of the manifestations of tabes are particularly resistant. The blood serum reactions in patients with late neurosyphilis do not tend to reverse so easily as those of the cerebrospinal fluid; in practice they may be almost disregarded. It seems clear in the present state of our knowledge that penicillin, plus fever, plus arsenic and bismuth provides the most effective treatment of late cases. Penicillin in oil-wax given once or twice daily appears to be just as effective as penicillin in solution given 3-hourly, and is much more convenient for all but hospital in-patients. Little has been reported on the relative merits of malaria and hyperpyrexia induced by physical means, but they appear to act equally well, the latter being safer but requiring more skilled staff and equipment.

[3] *Brit. J. vener. Dis.*, 1946, **22**, 112.
[4] *Essentials of Syphilology*, 1946, Blackwell, Oxford.
[5] In *Penicillin*, 1946, Edited by A. Fleming, London. P. 278
[6] *Proc. roy. Soc. Med.*, 1946, **39**, 465.

CO-OPERATION IN MEDICAL ABSTRACTS

One of the last conferences held by Unesco before the meeting of the General Assembly in Mexico was on the co-ordination of abstracting services for medical sciences. This conference was held at Paris on Oct. 3, 4, and 5, and the session was opened by a welcome to the delegates by the Director-General, Dr. Julian Huxley, and by Dr. J. Needham, Director of the Natural Sciences Division. Dr. Huxley gave a brief exposition of some of Unesco's recent activities, and said that the unification of abstracting systems in the medical field was a step towards forming what H. G. Wells had called a world brain. He extended a particular welcome to the representative from the World Health Organization, and, after he had concluded his address, the Conference, acting on Dr. Huxley's suggestion, appointed the Editor of the *British Medical Journal* as Chairman of the Conference, and Mrs. Eileen Cunningham, of the Medical Library Association of the U.S.A., as Vice-Chairman. Among those present were representatives of *Excerpta Medica* from Amsterdam, of the British Bureau of Abstracts, of *Biological Abstracts*, Philadelphia, and the Editor of *World Abstracts*; various experts from the Unesco Secretariat, and the Director of Technical Services of the World Health Organization. Dr. I. M. Zhukova, Medical Counsellor of the Natural Sciences Division of Unesco, reviewed the steps that had been taken towards the co-ordination of abstracting services, and mentioned that the *British Medical Journal* had been the first to suggest that this was a field of possible interest to Unesco in its task of disseminating scientific information.

The Conference began its work proper with a series of statements by the Editors of abstracting journals on the development of their services, of their aims and achievements. Dr. John L. Flynn, in an interesting exposition of *Biological Abstracts*, said that it had been founded by the amalgamation of two smaller abstracting services—the Bacteriological Abstracting Service, founded in 1917; and the Botanical Abstracting Service, founded in 1916. Prof. W. P. C. Zeeman gave an account of the approach of *Excerpta Medica*, which aimed at providing a comprehensive service by the publication of about fifteen different sections for the various special divisions of medicine. An example of amalgamation was given by Prof. Samson Wright, who observed that *British Abstracts* had been formed by the unification of the services of *Chemical Abstracts* and *Physiological Abstracts*. In addition to the statements of the Editors a number of documents had been laid before the Conference, including a communication from the National Research Council, Washington, in which it drew attention to the need for co-ordinating the abstracting services in biology and medicine, for eliminating wasteful duplication, and for publication at reasonable prices. The National Research Council also suggested that amalgamation of existing non-profit making abstracting agencies on an international basis might be made possible.

After these preliminary discussions the Conference took as the principal item on its agenda a document prepared by Unesco on co-operation in scientific abstracting. It was agreed that this co-operation should be between non-profit making organizations. The Conference scrutinized this document closely, and after detailed examination of each paragraph made a series of recommendations bearing

on the question of collaboration. It was made clear by all the delegates present that they had no authority from their respective organizations to commit themselves to effective action at this stage. The delegates, who will receive a full précis of the proceedings, will report back to their constituent organizations with a view to finding out how far each one may be prepared to go in a co-operative venture which may resolve some of the existing difficulties in medical and biological abstracting. As the meeting progressed it soon became clear that there was much overlapping of effort and much need, also, for a clearer definition of some of the terms used in recurrent discussions on the abstracting of medical literature. For example, the word "comprehensive" is frequently used without anyone being clear as to what exactly this means, and after this had been debated the Conference passed a resolution that: "A comprehensive abstracting service in the sense of abstracting all articles of all journals is impossible and undesirable." It went on to agree that a medical abstracting service should be comprehensive in the sense that it *surveys* the whole of the world medical literature. Such a survey, it was agreed, should include those sciences having a bearing on medicine, and an attempt should be made to secure the co-operation of abstracting services of non-medical sciences in the hope that these would indicate to the medical services matters of possible medical interest. An example given of this need was the appearance in a journal devoted to electrical engineering of an article on electro-cardiography.

The Conference was impressed by the fact that in these days there was hardly any science whose work did not find at one point or another an application in the theory and practice of medicine. The need of the consumer was laid prominently before the Conference. First, of course, was the need for information. Secondly, it was felt essential that the consumer should be able to have this information at the lowest possible cost, and so that this should be possible it was felt desirable to eliminate profit-making wherever practicable. Such elimination is, of course, more easily within the reach of professional organizations either acting singly or working together in groups.

As the Conference proceeded it became clear that there were a number of points at which collaboration could be effected between the biological abstracting services among themselves and between the medical abstracting services among themselves, and also between these two principal groups. It is hoped that these possibilities will be explored during the next few months and that the various organizations concerned may agree to put such co-operation into effect, possibly on an experimental basis for a year or so in order to see whether what are undoubted practical difficulties may be overcome. Although there were points of disagreement, as, for example, on the value of an author's abstract, the Conference after two days of solid work felt so encouraged by the progress made that it decided to recommend that an Interim Co-ordinating Committee on Medical and Biological Abstracting should be set up under the auspices of Unesco. On this Committee, in addition to representatives of the abstracting services, it is hoped to have among its members representatives of the World Health Organization, of the International Federation of Documentation, of the International Federation of Library Associations, and of the Medical Library Association. It was recognized, too, that there are other long-standing abstracting organizations representing more specialized branches of medicine not yet taking part in these preliminary discussions that should be represented on a committee of co-ordination if it does prove possible to secure agreement on the various proposals for collaboration. For this reason the Committee has been termed "Interim."

The fate of Unesco is indissolubly linked with the fate of UNO. If UNO can tolerate its existing discords and still remain in being then Unesco may be effective in furthering its object—to promote world peace and understanding—with some fair chance of success. Relating its activities to the more remote and idealistic conception of world peace and understanding, the conference on abstracting felt that it might have a part to play by disseminating information on the medical and biological sciences through the various professional groups in different parts of the world, thus bringing them closer together in a field where politics is much less obtrusive.

SYMPATHETIC DISORDERS IN POLIOMYELITIS

Acute poliomyelitis often causes pain in the limbs, which is sometimes remarkably persistent. Because it is often evoked or aggravated by movement of the affected part this painful state is loosely referred to as "spasm" even though muscle spasm as usually understood may not be apparent. The pathology of these painful disorders is unknown; even the site of origin of the pain is in doubt, though it is generally assumed to be in the muscles. That certain of the affected muscles are in an irritable state can no longer be questioned. Though a muscle may appear to be completely paralysed, it may show electromyographically that irregular action-potentials are being fired off when the muscle is apparently at rest, and a great burst of them may appear when the muscle is stretched. Such a muscle is painful, and the pain is a serious obstacle to effective treatment.

Any observation throwing light on this strange condition is welcome, and in this connexion the work of Collins, Foster, and West[1] is of considerable interest. In the course of treating American Service patients suffering from poliomyelitis they made use of paravertebral sympathetic block for the relief of vasomotor and sudomotor disturbances. As would be expected, the effect of procaine anaesthetization was, while it lasted, the same as that of ganglionectomy. Cyanosis gave place to flushing and warmth of the skin; the skin became dry, and oedema disappeared gradually. These effects were of much longer duration than could be accounted for by the anaesthetic action alone. After the first block the improvement lasted for about three days, and even longer after subsequent injections. The authors do not distinguish very clearly between objective and subjective improvement, but the latter at all events often persisted for as long as ten weeks after the third injection. A remarkable change occurred in three cases showing muscle spasm, tenderness, and pain; the sympathetic block gave complete relief, which was much appreciated by the patient. In one case in which the painful disorder was severe and involved both lower limbs the first injection arrested the pain and spasm only on the side of the injection; relief on the other side followed anaesthetization of the corresponding lumbar ganglia. These findings suggest that the painful irritative phenomena of poliomyelitis may be vascular in origin. It is well known that applications of heat to the painful limb often give great relief, relief that must surely be due to

[1] *New Engl. J. Med.*, 1947, **236**, 694.

increased vascularity of the part. Perhaps some of the more puzzling phenomena of poliomyelitis may be solved by investigation of the part played by the sympathetic nervous system.

CONVALESCENT HOMES

The Institute of Almoners, through a committee of its members headed by Miss C. Morris, the almoner of the National Hospital, Queen Square, has lately undertaken a survey of the convalescent homes of England and Wales. There were 318 of these homes, with approximately 14,000 beds, known to be open in the middle of the present year; 270 have been visited by this energetic committee, and in 12 cases the visitors were refused admission. Convalescent homes have developed without co-ordinated planning or supervision. They are unevenly distributed; the greater number are on or near the southern and south-eastern coasts. Wales is inadequately served, and the barest region of all is the north-east, with only nine homes providing 420 beds. The homes are subject to a seasonal ebb and flow—waiting-lists are longest in the summer. It is said that some patients in the Midlands have to wait six weeks to two months for admission, and, in fact, nowhere is it possible to find immediate vacancies except in winter. There is, too, a tendency for some homes admitting elderly convalescents to become homes for semi-chronic cases; sometimes the convalescents and the chronic sick are cared for in the same wards, and this may give rise to a depressing atmosphere which is the very opposite to what a convalescent home should convey.

Most of the homes, according to their own statements, take general post-operative and medical cases. The almoners say that the provision for patients with gastric conditions requiring dieting is not adequate; that cases of cardiac disorder are accepted only in a few homes; that until recently there has been no convalescent home for patients suffering from fits; that it is very difficult to place patients with asthma or those suffering from pulmonary tuberculosis; and that there is hardly any provision for skin or for cancer cases or for patients with colostomies. The majority of homes also decline to take cases needing treatment in bed or nursing attention at night. Little treatment of any kind seems to be given, and a visiting doctor usually attends once a week, or when required. The number of homes where any but minor dressings are undertaken is very small. Occupational therapy is mentioned only in connexion with five homes. Other criticisms are that often the buildings are old or ill-adapted for their purpose, living rooms have a bare appearance, and there is lack of variety in the diet. The last of these faults is perhaps excusable at present, though there is room for imagination in the preparation and serving of food in many institutions, especially among convalescent patients whose appetites require coaxing. In many homes the rules are too rigid. The strict regime of the hospital is out of place in the convalescent home. Breakfast in bed was found to be usual in only six homes, though in nearly half of those visited the management was prepared to give breakfast in bed if required. The hour of rising is sometimes far too early; in one home patients have to get up at 6.30 a.m. The last meal may be taken in the late afternoon, and in many homes no hot drink is served at bedtime. Some homes have the nonsensical rule which forbids men and women in the same establishment from meeting or going out together.

The Institute of Almoners has again performed a useful piece of work. The majority of these institutions are voluntary, many of them connected with trades and professions, some with religious groups, others with social agencies, some twenty or thirty with voluntary hospitals, and a smaller number with hospital contributory schemes. The National Health Service Act, in so far as it concerns itself with the after-care of the patient, places the responsibility for making arrangements upon the local health authority, which may, with the approval of the Minister, contribute to any voluntary organization formed for the purpose. Unfortunate convalescent surroundings may go far to undo all that the best hospital has done, and this report implies that there should be set up some minimal standards for convalescent homes.

PANCREATITIS

Inflammatory diseases of the pancreas are not common, and our experience is usually confined to acute and chronic pancreatitis. The first of these, acute pancreatic necrosis, occurs as a sudden and often dramatic abdominal catastrophe. Chronic pancreatitis is less clearly defined: it may give rise to an indefinite dyspepsia the nature of which is often not apparent until steatorrhoea or calcification in the pancreas is detected. In both these disorders infection of the biliary tract is usually present and is thought to be the precursor of the inflammation in the pancreas. Recently Comfort, Gambill, and Baggenstoss,[4] of the Mayo Clinic, have described 29 examples of what they call chronic relapsing pancreatitis in patients who showed no signs of associated disease of the biliary or gastro-intestinal tracts. The chronicity of the disorder was shown by one case in which there were symptoms for over twenty years with recurrences at intervals of from two days to nineteen years; the pancreatitis was proved by histological section. In all the patients there was a transitory disorder of pancreatic function during the acute exacerbations, though in remissions all tests might be negative. In those, however, in whom single attacks were severe or in whom recurrent attacks led to progressive destruction of the organ permanent pancreatic insufficiency resulted, and there might be diabetes, steatorrhoea, or pancreatic calculi. In a few instances all three of these sequelae developed.

In all at least 89 cases were admitted to the Mayo Clinic between 1939 and 1943, but a close study was made of only 29. Twenty-five of these were males and only 4 females, in sharp contrast to infections of the biliary tract. One-third of the patients took alcohol in excess, and in four instances a drinking bout preceded the attack. Usually this type of pancreatitis began with acute pains in the epigastrium or right hypochondrium, though in some the pains generalized. Radiation to one or other shoulder tip was not uncommon. The pain was steady rather than colicky, and it was often so severe as to require repeated injections of morphine. Sometimes it subsided within a few hours, but in six cases it persisted for four or five weeks. Nausea and vomiting, diarrhoea or constipation, fever with occasional rigors, and jaundice occurred, and in two cases there were haematemesis and melaena. Some of the patients became very shocked. Tenderness and muscle spasm were usually confined to the epigastrium, more often on the left than the right, but true abdominal rigidity was not observed. Other physical findings included enlargement of the liver or spleen and the development of a pancreatic cyst or of persistent jaundice.

Laboratory findings were inconstant. Leucocytosis was uncommon, even in an acute episode; hyperglycaemia and glycosuria, an increase in the serum bilirubin, a raised serum amylase or lipase, and steatorrhoea were all found in some of the patients, though the diagnosis was made in

[3] *Trans. Amer. Soc. heat. vent. Engrs.*, 1939, **45**, 161.
[4] *Gastroenterology*, 1946, **6**, 239.

many instances from the clinical history alone. Occasionally the abnormalities persisted during remissions, but more often there was a return to normal between attacks. In half the cases a skiagram showed calcification of the pancreas.

The pancreas was described as being firm at operation, or hard and nodular like a carcinoma, or showing a diffuse oedema. In only one case was there haemorrhagic necrosis. These changes, and calcification or calculi formation, might be localized to the head, body, or tail of the organ, or generalized throughout its length. When the head of the pancreas was involved and the common bile-duct compressed there were dilatation of the biliary system and jaundice. Histologically there was pronounced fibrosis of the pancreas, with cellular infiltration and varying degrees of atrophy and disorganization of the acini and islet tissue.

The results of treatment were uncertain. Medical treatment by means of a diet, with the addition of pancreatin or insulin when these were indicated, would control the sequelae of the disease but did not prevent recurrences. Twenty-two of the cases came to operation; various procedures were tried, but drainage of the gall-bladder, either externally or into the duodenum, appeared to be the best method. It was followed by complete remission of symptoms in 7 and by improvement in 4 of the 17 cases in which it was done.

The authors' claim that the symptoms of chronic relapsing pancreatitis are so striking that its recognition is a simple matter may be true if the doctor is aware of its existence and if there is a history of previous attacks; in a first or isolated attack the diagnosis must always be difficult. A knowledge of its existence may be important for two reasons: first, as an alternative diagnosis to a suspected perforated peptic ulcer, since many of these cases appear with all the signs of perforation except the characteristic board-like rigidity; and, secondly, as an alternative diagnosis to carcinoma of the head of the pancreas. Although severe pain is usually the leading symptom it may be slight or even absent in chronic relapsing pancreatitis, so that biopsy of the pancreas and drainage of the gall-bladder may completely alter the prognosis in what appears to be a hopeless case of malignant jaundice.

CARDIO-PULMONARY FUNCTION AFTER PNEUMONECTOMY

The great advances made in thoracic surgery in the last decade have been largely in surgical technique and in knowledge of the anatomy of the lung. Now probably a stage has been reached when further advances will have to follow a greater knowledge of respiratory physiology, a relatively unexplored field. Bronchospirometry is likely to give much information about loss of respiratory function, and this application of physiology to the recently gained knowledge of pulmonary anatomy will help surgeons to know what procedures can be carried out safely. Estimates can also be made of the respiratory function left to patients who have had a pneumonectomy and lobectomy in the past.

Cournand and his colleagues[1] have just published the results of their studies of two boys and two girls in whom left pneumonectomy was performed for pulmonary suppuration ten years ago. In two of the cases a radiograph of the chest showed no evidence of distension of the right lung as judged by the position of the trachea and heart and the absence of mediastinal herniae; in the other two cases there were mediastinal herniae. Further, on screening, the range of movement of the right diaphragm in the first two cases was small. Physiological studies were made repeatedly on these two patients between 1940 and 1946. The measurements included lung volume, pulmonary emptying rate, and maximum breathing capacity; ventilation and respiratory gas exchange under basal conditions, during and after a moderate type of exercise, and during the last minute of an exhausting type of exercise; and the state of respiratory gases in the arterial blood, at rest and immediately following completion of the moderate and the exhausting exercises. The techniques used for these studies were those previously described by Cournand.[2 3 4] In the two cases which showed no distension radiologically the measurements of lung volume also showed no increase. The volume changes between full expiration and inspiration revealed that the remaining lung expanded more than one of a normal pair of lungs, presumably because there was no contralateral lung to prevent expansion into the opposite chest. The figures obtained by measuring the pulmonary emptying rate strongly suggested that at rest the ventilation of the various parts of the lung was equal even in the cases with distension of the lung. Since the residual air in the distended lungs was increased—and it is constantly found that as the ratio $\frac{\text{residual air}}{\text{total lung capacity}} \times 100$ increases the ventilating efficiency decreases—it was not surprising that the maximum breathing capacity was relatively smaller in the two cases with pulmonary distension than in the other two. Accordingly the breathing reserve during the last minute of exhausting exercise was much smaller in the cases with pulmonary distension.

Important observations were made on the oxygen saturation of the arterial blood. In all four patients at rest and after moderate exertion the blood was fully saturated; but in the two cases with pulmonary distension the arterial blood saturation immediately after the exhausting exercise was at the low levels of 83 and 84%, compared with 92 and 93% for the two cases without distension. There was in fact a marked anoxia which caused rapid muscular fatigue and mental lassitude. This occurred despite the fact that the CO_2 output and the oxygen intake in the alveoli was normal. The right heart was catheterized, and the systolic and diastolic pressures in the pulmonary artery were within the normal limits—findings which indicate that the total blood flow through the lung was approximately the same as that of the normal blood flow through two lungs. This normal pressure–flow relationship may be achieved by an increase in the number of capillaries and in their size. An increase of only 16% in the diameter of the capillaries would allow 100% increase in the pulmonary blood flow without any change in pressure in the pulmonary artery.

It is clear from these observations that pulmonary distension after pneumonectomy is not a compensatory process; in fact, it produces considerable disablement, and surgical ingenuity must be directed to its prevention. It depends strictly upon the prevailing mechanical condition, and in this the flexibility of, and the presence of weak points in, the mediastinum are the most important factors. In adults attempts can be made to keep the mediastinum in its proper place by means of thoracoplasty, which not only does not impair the efficiency of ventilation of the chest but may improve it by reducing the pulmonary distension. In children, however, thoracoplasty is a crippling operation, and other means must be sought for keeping the mediastinum in its proper position; perhaps it could be achieved by the introduction of air or oil into the hemithorax on the side of the pneumonectomy.

[1] *J. thorac. Surg.*, 1947, **16**, 30.

[2] *J. thorac. Surg.*, 1942, **11**, 529.
[3] *Ann. Surg.*, 1942, **116**, 532.
[4] *Amer. Rev. Tuberc.*, 1941, **44**, 123.

Fig. 1.—West elevation, with entrance ramp and principal entrance.

A NEW SWISS OTOLARYNGOLOGICAL CLINIC

BY

E. D. D. DAVIS, F.R.C.S.

Many of the hospitals in this country are planning to rebuild or to reconstruct their buildings. It is hoped that the otolaryngological departments will have a full share in this necessary reconstruction. I have recently returned from a visit to the two newest Swiss hospitals at Zurich and Basle. I was very much impressed by Prof. Nager's new otolaryngological clinic at the Canton and University Hospital, Zurich, and decided that a description of the clinic would be useful.

The Canton and University Hospital, Zurich

This new hospital is being built in sections in an open park on the site of the old one. It is situated on a steep incline, in a broad tree-lined avenue opposite the University buildings, and is about fifteen minutes' walk from the centre of Zurich. It will consist of one large central building of five stories, linked by bridge corridors to about five four-story buildings. A model of it is displayed in the entrance hall of the new polyclinic.

The polyclinic, or out-patient department, is the only new building completed, and I spent two separate days inspecting it. It is a four-story structure, with a long façade set back from the main avenue (Fig. 1). I had the good fortune to know Prof. Nager, the director of the otolaryngological clinic, and he kindly gave up more than two hours of his valuable time showing me round. He has spent nearly fifteen years planning this new building, and for the result merits the highest praise. He insists that the medical staff should plan their own departments in collaboration with the architects, who would carry out their desires. It is essential that both medical officer and architect should visit other new hospitals, such as those at Stockholm.

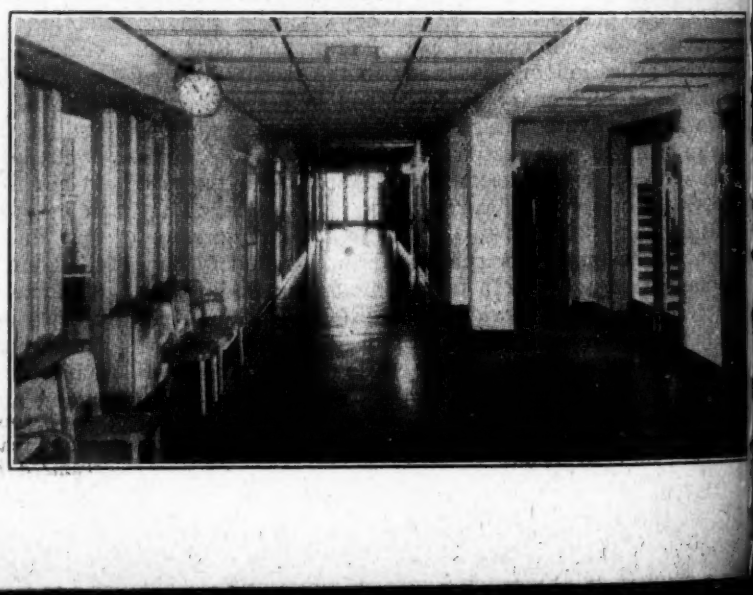
The main entrance is on the ground floor in the centre of the building and has two sets of metal-and-glass swing-doors. This entrance opens into a large oblong hall, well lighted by large windows on both sides. On the street side there is a spacious registration office separated from the hall by a glass-panelled partition. At the farther end is a waiting-room, at the near end a separate entrance to the clinic for students. The entrance hall covers a large part of the ground floor. The building is air-conditioned and sound-proof, and has panel central heating. As there was 12° C. of frost in Zurich it was a good test for an air-conditioned centrally heated building. Both air and heat are excellent. During the winter in Switzerland air-conditioning is very necessary, but in summer the windows are opened both in this hospital and in the new Basle hospital. The straight, broad, well-lighted corridors are excellent. The walls and ceilings are lined with sound-proof panels, which are easily removed for ready access to the pipes and electric wires, etc., placed in the ceilings.

The Otolaryngological Clinic

This occupies the second and third floors. A broad, well-lighted, straight, and spacious sound-proof corridor passes from end to end of the clinic (Fig. 2). In the centre of this corridor is a roomy entrance lobby, with large windows and giving access to the lifts and staircase. Immediately opposite the staircase, over a glass-panelled door of the large office of the secretarial staff, is a clock. This office is separated from the corridor by a well-designed wood-and-glass partition, and anyone inside has a view of the corridor and its entrance. Adjacent to the secretarial office the director, Prof. Nager, has his suite, consisting of a large consulting-room with a smaller room for examining patients, an experimental research laboratory, a histological laboratory, and a third laboratory for microscopy. The laboratories are presided over by a skilled lady technician. On the opposite side of the corridor is a waiting-room, with the necessary cloak-room and lavatory accommodation for the director's private patients. On the other side of the secretary's office is a library of ample size. All these rooms have communicating doors. At one end of the corridor are two operating theatre suites, a special theatre for endoscopy, a room for labyrinth tests, etc., and a camera silentissima for hearing tests research and audiometry.

On the side of the corridor opposite to the director's laboratories is the sisters' room; a series of small rooms for treatment such as short-wave diathermy, light treatment, and an inhalatorium with electrically heated inhalers; and a large waiting-room. Next to the last-named is a spacious and well-lighted

Fig. 2.—Standard corridor connecting with the future ward block. Ceiling are reduced from the normal height of 3 metres to 2.45 metres by means of removable panels providing space for installations and reducing echo. The floor-covering is of cork sections.



out-patient clinical room (Fig. 3). This has nine sets of open cubicles for examination, separated into two groups of five and four by a room for washing and sterilizing instruments, etc., with a glass-panelled partition and door. There are surgeons' washing-basins within easy reach of every cubicle. Each cubicle is well equipped with double electric-lighting sets—one for the forehead reflecting mirror and the other a switch-board for head-lamp, transilluminator, cautery, etc.—a small sterilizer, a spittoon, a glass-door cabinet for special instruments, a trolley for small trays for examining instruments, dressings, and drugs, a small pull-out writing-table; in fact, a complete outfit for the examination and minor treatment of any ear-nose-and-throat patient. All this equipment is mobile. Each cubicle has an electric-light indicator signalling by numbers: 1, to summon the nurse; 2, to summon the next patient; and 3, to summon the secretary. In addition to the large waiting-room there are two recesses, opposite but not in sight of the examining cubicle, for three or four patients about to be seen or for a patient having cocaine or other local analgesic. In line with the recesses is a secretary's office, nurses' room, and lavatories. A record office and a series of small rooms for a speech clinic and for the treatment of defects of speech are near by. Immediately beyond the out-patient room is a narrow passage about 60 ft. (18 m.) in length, isolated by swing-doors, for the testing of hearing of the voice, whisper, etc. On the farther side of this passage is a small theatre for tonsil and adenoid operations and a complete suite of rooms for the recovery of these patients, who remain the whole day, or longer if necessary. Adjoining this suite is a recreation room and bathroom, etc., for nurses. There is a terrace balcony or solarium on the roof, and balconies are placed wherever practicable and desirable. There are many more details of equipment and accommodation which are better seen than described.

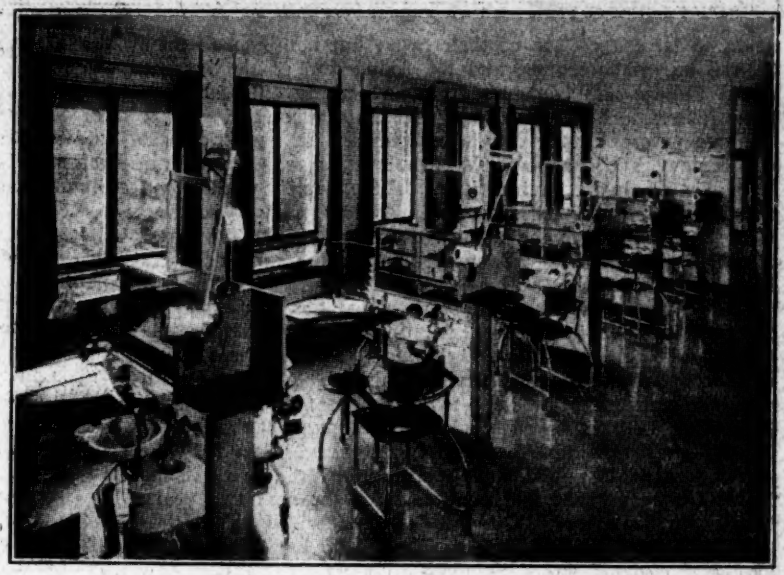


FIG. 3.—Northern half of the main treatment room of the E.N.T. clinic, with five treatment chairs. Sterilizing-room adjoins on right. Apparatus, desk, plumbing, etc., mounted on transversely placed units so that the treatment chairs are separated off while the unity of the room is preserved. Service passage alongside windows.

The 60 beds of the otolaryngological clinic are temporarily placed on the next floor, but the clinic is to be connected to the in-patient block for the special departments, and in future the beds will be on the same floor level as the theatres.

The director sees and treats all his private patients at the clinic. He does his hospital work usually from about 8 a.m. to 12 noon every day, and sees his private patients in the afternoon. He teaches students in the afternoon in the students' clinical and lecture theatre, where there are about thirty lamps and places to examine patients. From 60 to 150 students each year do a three-months session. The course is for three years, and they have to pass an examination in otolaryngology. The complete qualifying period for medical students is 6½ years. The director is given full secretarial assistance and is encouraged to do, and is given every facility for, clinical research and private practice. All the departments of the hospital are to have this generous accommodation and equipment.

Conclusion

The outstanding features of the new Swiss hospitals are:

(1) The well-designed entrances and exits, with imposing well-lighted entrance halls.

(2) The straight broad corridors, efficiently heated, air-conditioned, sound-proofed, and well lighted by windows. As many large windows as possible, glass-panelled doors, and glass-panelled partitions of the secretarial and registration offices and day rooms conserve the light. There are no "tube station" passages and no spots of congested traffic.

(3) The recreation or day rooms on each floor, the numerous balconies, and the roof solaria, which are well placed and designed.

(4) The provision by the Swiss authorities for their medical staff of every facility for private and hospital practice and for clinical research, as well as secretaries and technical assistants. These facilities are also now provided for those departments which have not been rebuilt.

The medical officers have taken an active part in the planning and designing of their own departments, particularly with regard to such details as the placing and allocation of rooms, equipment, labour-saving devices, etc. This responsibility of planning is accepted with enthusiasm by all the medical officers concerned.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

Conferment of Honorary Fellowships

On the occasion of the grant of the Royal Charter to the Royal College of Obstetricians and Gynaecologists by H.M. the King this year the opportunity was taken to confer the Honorary Fellowship on the four surviving signatories of the articles of association whereby the College was incorporated—namely, Prof. J. M. Munro Kerr, Prof. C. G. Lowry, Sir Ewen Maclean, and Sir William Fletcher Shaw. The ceremony took place at the College, 58, Queen Anne Street, on Oct. 3. The President first paid a tribute to the signatories who had died—namely, Dr. H. Russell Andrews, Prof. W. Blair Bell, Sir Comyns Berkeley, Sir Francis Champneys, and Dr. T. Watts Eden.

Prof. Munro Kerr was introduced by Prof. R. H. Lennie, who spoke of Prof. Kerr's occupancy of the Muirhead chair of obstetrics and gynaecology at Glasgow University, a post which he held for sixteen years, and latterly his regius professorship at the University. Sir Eardley Holland introduced Prof. Lowry, emeritus professor of midwifery in the University of Belfast, where he had exerted a most beneficent influence on Irish medicine. The next recipient was Sir Ewen Maclean, introduced by Prof. G. I. Strachan, who spoke of Sir Ewen's work in the University of Wales and also of his wise counsel in all matters that concerned the Royal College. Finally, Mr. G. F. Gibberd, in introducing Sir William Fletcher Shaw, said that the very inception of the College was due mainly to his inspiration.

Sir William Fletcher Shaw, replying for the four Honorary Fellows, said it had been discovered recently that in the last century a number of obstetricians had suggested the foundation of such a college. Many of the leading obstetricians of that time had made suggestions which would have greatly improved the teaching and practice of obstetrics, but almost invariably the physicians and surgeons had joined together to prevent those suggestions from being carried out. The obstetricians, realizing that this was due to their opponents being organized in Royal Colleges, were of the opinion that they

ought to have a college of their own; but nothing had then been done in the matter, and the foundation of the present Royal College had come about in an entirely different way. Later it became obvious to some of them that something must be done to prevent the complete separation of obstetrics and gynaecology, and it appeared that the best course was to form some central body, preferably a college, which would bind together all those obstetricians and gynaecologists who believed in the indivisibility of the two subjects, and through the portal of which all must pass who wished to practise this particular branch of medicine.

He went on to speak of the early difficulties in the way of the formation of such a college. In the early 'twenties the support of the Gynaecological Visiting Society, whose members occupied almost every chair in this subject in the British and Irish universities, was enlisted, and a committee of four—Prof. Blair Bell, Sir Ewen Maclean, Sir Comyns Berkeley, and himself—was appointed to report on the matter. In 1927 the matter was made public, and opposition by the two existing Royal Colleges began and continued for the next two years. Finally, in September, 1929, the College received its registration from the Board of Trade. Those who had founded the College had handed on the torch to a new generation now being admitted to its membership. Whether it progressed or retrogressed would depend upon the amount of interest which the young people took in it and the sacrifices they were willing to make in its behalf. He and his colleagues had no fear for its future.

Dinner

In the evening Mr. W. Gilliatt, P.R.C.O.G., presided over a dinner at the Connaught Rooms. Mr. Aneurin Bevan, Minister of Health, proposing the toast of the Royal College, said that he had learnt from the newspapers that he was being moved about, and in the last few weeks he had been associated with every office under the Crown. He hoped that he would be spared to carry to maturity the great schemes which the Ministry of Health had launched. Mr. Gilliatt, in reply, referred to the ceremony which had taken place in the afternoon and described a project which was already under way for earmarking resident appointments for postgraduate students from the Dominions.

The toast of "The Guests" was proposed by Dr. H. R. Maclennan, of Glasgow, and Sir Herbert L. Eason and Mr. F. A. Maguire, of Sydney, replied. Mr. Maguire, who is chairman of the Regional Council in Australia of the Royal College of Obstetricians and Gynaecologists, gave some account of the present difficulties in medical education in Australia. Sydney in a normal year had 150 medical students. To-day there were 700 second-year and 800 first-year students. This problem continued into the postgraduate field. He referred appreciatively to Sir William Fletcher Shaw's recent tour of Australia and New Zealand and underlined the importance of continuing such links between Great Britain and the Dominions.

FIRST EUROPEAN CONGRESS OF RHEUMATOLOGY

The first European Congress of Rheumatology was held at Copenhagen on Sept. 3–8 under the presidency of Prof. C. Holten, of Aarhus, Denmark. There were 400 delegates representing 25 countries, and guests of the Congress also came from Egypt, America, and Canada. At a meeting held before the Congress a European Section of the Ligue Internationale contre le Rhumatisme was founded on the same lines as the Pan-American Section formed during the war. Dr. M. P. Weil, of Paris, was elected the first president; Dr. W. S. C. Copeman (Britain) and Prof. B. Prusik (Prague) were elected vice-presidents; and Prof. E. Jarlov and Dr. K. Kalbak, both of Denmark, the secretary-general and the secretary respectively. It is hoped that the next congress of this body will be held in Prague in 1948.

At the opening session, for which the great town hall was packed, H.M. the Queen of Denmark was represented by H.R.H. Princess Caroline Mathilde, and the Ministers of Health and Social Affairs spoke of their daily contact with the rheumatic diseases as a social problem of considerable magnitude. The help of their departments is already officially pledged to the campaign which enlightened public opinion has forced on them. The president then gave his inaugural address, and pointed out that the field of clinical observation has not yet been exhausted in this disease group. He emphasized the importance of correlating the recently gained knowledge of associated diseases such as periarteritis, myositis, and scleroderma, as well as of peripheral vascular and sympathetic nervous physiology. He referred to the increasing interest of the public in this group of diseases and their demand for action in Denmark and Sweden. All this increases the need for rheumatologists to take stock of their position and to combine to fill the many gaps in their knowledge of this new specialty. To aid in this respect is the object of the new body, whose aims are the exchange of current knowledge and the organization of team investigation in every country through the national branches and, in this country, through the Empire Rheumatism Council.

The outstanding contribution in the session which followed was that of Dr. G. D. Kersley (Britain) on the morbid anatomy and histology of rheumatic lesions. He confirmed the work of Freund and others in 1946 on the existence of a specific type of lesion in rheumatoid arthritis which occurs in any or all of the muscles of the body at any stage of the disease as well as in other mesodermal tissues and around the peripheral nerves. The lesion consists of a perivascular accumulation of lymphocytes, with degenerative and proliferative changes in all the coats of the small blood vessels and degenerative changes in the muscle fibres. He also spoke of nodule formation in various types of rheumatism; and he suggested the probability of a dual pathology in "fibrositis."

Most of the scientific contributions dealt with the question of the anti-streptolysin titre and similar antibody responses in both rheumatic fever and rheumatoid arthritis, notable among these being the papers of Winblad (Sweden), Kalbak (Denmark), and Prof. Svartz (Sweden). It is evident, however, that no finality of opinion has been reached on this subject.

The next session, under the chairmanship of Dr. W. S. C. Copeman (Britain), was devoted to the treatment of rheumatoid arthritis by means of gold salts and chemotherapy. This was introduced by a useful contribution by O. Steinbrocker (U.S.A.) on the criteria which should be employed for the assessment of results by these means. A full account of the subject by J. Forestier was presented by Coste (France), and confirmation of the value of various gold salts in rheumatoid arthritis came from papers by Secher (U.S.A.) and Clemmeson (Denmark), Sunderlin (Sweden), Kuipers (Holland), and Döbelie (Switzerland). Much less optimistic accounts came from Schlesinger (Britain), who was speaking principally of Still's disease, and from some speakers in the discussion.

The third and fourth sessions, under the chairmanship respectively of Prof. F. Coste (France) and Dr. Van Breeman (Holland), discussed various aspects of the social background of the rheumatic diseases, and the outstanding biochemical problems of rheumatism. In the former category important new statistics were produced from France, Sweden, Switzerland, Denmark, and Eire, and, in the latter, papers were read by Prof. de Sèze (France), Edström and others (Sweden), and Prof. Dirisu (Turkey). Papers on various other subjects (limited to ten minutes) were also presented by a number of delegates including representatives of Belgium, Norway, and Czechoslovakia.

The Congress then moved from Copenhagen to the University of Aarhus on the mainland, where it split up into two sections and reports of personal investigations into various aspects of rheumatism were briefly presented. These included liver tests in rheumatism, studies in the peripheral circulation of rheumatics, food allergy in rheumatoid arthritis, dental infection and joint disease in mediaeval Denmark, rheumatic fever among the partisan forces of Yugoslavia, jaundice as a "rheumatic" disease in Poland, and the role of wound sepsis in unmasking rheumatic syndromes during the war in Rumania.

In addition to the scientific programme much official hospitality was arranged by the Danish Rheumatism Association, of which Prof. Jarlov is president. The lavish private hospitality which supplemented this was an atavistic experience enjoyed to the full by delegates from "austerity" areas.

MEDICAL LIBRARIANS

At a meeting in London on Oct. 4 a new subsection of the Library Association devoted to the professional interests of medical librarians was inaugurated. Various projects which will advance the usefulness and efficiency of medical libraries throughout the country were discussed, some of which will shortly be started. These include a union list of medical serials and their location in British libraries, inter-library loans, and the exchange of material to assist the completion of imperfect sets of important journals. The committees and governing bodies of medical libraries will doubtless welcome the opportunity which will now be afforded of obtaining authoritative advice and assistance from this new professional group. It is of interest to record that Sir William Osler suggested the formation of such a body as long ago as July 28, 1909, at the Annual Representative Meeting of the British Medical Association at Belfast; his suggestion did not then bear fruit, but we hope that success will attend this new venture.

At future meetings papers of a technical and bibliographical nature will be read, and members of the medical profession will always be welcomed as guests. Further details may be obtained from the secretary of the group. The following committee was appointed to manage its affairs: C. C. Barnard (London School of Hygiene and Tropical Medicine); W. J. Bishop (Wellcome Historical Medical Museum); W. A. Lee (Liverpool Medical Institution); W. R. Le Fanu (Royal College of Surgeons); T. J. Shields (British Medical Association); Miss E. Wigmore (National Institute for Medical Research); G. F. Wilson (Manchester Medical Society).

Reports of Societies

THE CHARTERED SOCIETY OF PHYSIOTHERAPY

The Annual Congress of the Chartered Society of Physiotherapy was held in Edinburgh on Sept. 25–28 under the chairmanship of Dr. W. S. C. COPEMAN by invitation of the Edinburgh branch of the Society. In addition to a considerable attendance of medical men, 500 members were present.

Prof. J. R. LEARMONTH gave the inaugural lecture on "Arterial Supply and Function in the Extremities." Miss Gertrude Hertzfield was in the chair. The lecturer summarized the present knowledge of the peripheral vascular system and described its application to medicine and the part that surgery can play. He described his experiments on the reflex effect of heat applied at distal portions of the body and suggested these might ultimately affect the practice of physical medicine. This was illustrated by slides and a film. Prof. R. J. KELLAR then spoke on "Physiotherapy in Relation to Gynaecology and Obstetrics." During the afternoon session Dr. ANTHONY RITCHIE spoke on the experimental side of electrotherapy in somewhat iconoclastic vein, and suggested that many of the hitherto established tenets of electrotherapy are due for revision in the light of modern physics. Dr. DAVID YELLOWLEES followed with an address on the psychological aspect of physical disorders.

The Founders lecture was delivered on Saturday morning on "Mind and Body," by Mr. W. J. STUART (in the absence of Prof. F. A. E. Crew). The chairman was Lord Horder, the President of the Society. The final lectures were by Prof. CHARLES CAMERON on "The Physiotherapist and the Treatment of Tuberculosis" and by Prof. R. W. B. ELLIS on the modern status of the poliomyelitis problem, principally as it affects children. He felt unable to support the Kenny method of treatment fully, although he considered that it had drawn attention to a subject that was previously somewhat neglected. He also warned delegates against placing their faith in convalescent serum for this disease.

Visits were arranged on each afternoon to the Pollock Institute of the University of Edinburgh, the Astley Ainslie Convalescent Hospital, the Simpson Maternity Department of the Royal Infirmary, and the Princess Margaret Rose Hospital for Crippled Children. The Congress was honoured by the Lord Provost, who gave a reception.

Preparations and Appliances

A NEW AID FOR PHOTOMICROGRAPHY AND GENERAL LABORATORY PHOTOGRAPHY

Dr. A. C. LENDRUM, of the department of pathology, University and Western Infirmary, Glasgow, writes: The grainless photographic emulsions evolved for microcopying, and now available in the larger sizes, provide a valuable new tool for the photomicrographer and laboratory worker. This type of emulsion, which allows a remarkable degree of grain-free enlargement, is of high contrast; but, as Tritton (*Brit. J. Photography*, 1946, **93**, 374) observes, this steep contrast can be flattened as desired by modifying the developer, thus offering two distinct advantages. First, with this material alone (e.g., Ilford panchro line flat film) one is equipped to reproduce at anything from the steepest contrast to the softest gradation. Secondly, the grain-free nature of the emulsion allows one to print enlargements of so-called "contact quality." The slowness of this stock is of no disadvantage in photographing the inanimate.

Tritton advises the following dilutions as giving gradations on the negative corresponding to the range of tones in the object named. For the copying of photographs or printed half-tone illustrations use A; for lower contrast (e.g., in the photography of solid objects with their longer range), use B.

		Kodak	Ilford									
A:	One part	DK.20	or	1D–48	with	4	parts	water	for	5½	mins.	at 65° F.
or	„ „	D.76	„	1D–11	„	5	„	„	„	5½	„	„ „
B:	„ „	DK.20	„	1D–48	„	9	„	„	„	10–13	„	„ „
or	„ „	D.76	„	1D–11	„	9	„	„	„	6–8	„	„ „

In photomicrography, too many workers who are skilled in the use of a single type of emulsion fail to employ a more or a less "contrasty" emulsion for the section that in fact demands it. Admittedly some meet this situation fairly well by altering the colour of the taking light, but this is often really an abuse of the filters and produces an undesirable shift of emphasis in the opacities of the different tissues. It is not always easy to judge the tone range of a section as seen on the ground-glass screen, but a trial negative will show if higher or lower contrast is desirable. Undiluted 1D–11 for 5½ minutes at 65° F. (18.3° C.) gives about as high contrast as is likely to be needed in photomicrography if one intends to enlarge.

Any advocacy of enlarging from photomicrographic negatives is usually met with dark hints about the futility and wickedness of empty magnification, and until now it has not been easy to obtain visually satisfactory enlargements from quarter-plate negatives. An unfortunate result of the techniques available in the past has been the frequent use of the 2-in. (5-cm.) circular print; the critical worker insisted that anything bigger than this showed obvious lack of definition. For most observers, however, this is too small a picture, and if the magnification be under fifty times in order to show the architecture of a tissue, then the cellular detail is quite beyond the middle-aged eye. It is to be hoped that, when conditions permit, editors will accept, as they have to some extent in America, the desirability of larger reproductions. Using this new emulsion one can enlarge from the critically focused central part of the negative, with the further benefit that one obtains the greater depth of focus of the longer focal-length objective. One is thereby not confined to the circular shape which, so long as we have rectangular journals, is extremely wasteful. The surface coating ("blooming") of the enlarging lens is another modern aid to the production of the technically satisfying print.

There is an old saying that the negative must be judged by the print, but the intrinsic virtue of this new film is strikingly shown by comparing with a lens (eight times magnification) a quarter-plate negative on this and on an ordinary emulsion: with the ordinary emulsion resolution of detail tends to be lost in grain, whereas the new emulsion reveals unsuspected and perfectly defined detail.

Correspondence

R.M.B.F. Christmas Appeal

Sir,—Christmas comes but once a year, and when it comes should bring good cheer. I therefore appeal to your readers to help those who have to look to others for whatever extra comforts may come their way. The beneficiaries of the Royal Medical Benevolent Fund are either aged or infirm practitioners, their wives, widows, or children; and, but for the grace of God, any one of us or our families might be in like need.

I hope subscribers to the Fund will send an extra donation to make this Christmas a little less bleak and grim. I earnestly ask those who are not subscribers to show their sympathy for their less fortunate colleagues, not only by sending Christmas gifts, but by becoming regular supporters of the Fund.

Contributions and subscriptions should be sent to the Secretary of the Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, Putney, London, S.W.15, and marked "Christmas Gifts."—I am, etc.,

Alfred Webb-Johnson,
President,
Royal Medical Benevolent Fund.

Poliomyelitis

Sir,—I was interested in the letter from Dr. J. M. Alston (Sept. 13, p. 432) calling attention to the evidence suggesting that infection by poliomyelitis virus is common, with paralysis occurring in only a small proportion of those infected. Investigation of another neurotropic virus, that causing louping-ill in sheep, has emphasized to me the importance of factors which in the individual animal allow a potentially neurotropic virus to invade the nervous system from the blood.

Injected directly into the brains of non-immune mice and sheep, louping-ill virus always causes fatal encephalitis. Injected peripherally (intraperitoneally or subcutaneously), it multiplies and reaches the blood, but in only a proportion of animals does it subsequently invade the brain. There is evidence that environmental conditions affecting nutrition determine the proportion of sheep which develop encephalitis. In two experiments carried out in June and July of successive years a group of four and a group of three sheep were inoculated subcutaneously with virus, and none developed encephalitis. Of 27 sheep similarly inoculated during winter and early spring 55% died.

It has been shown that the virulence of louping-ill virus and some other encephalitic viruses can be modified by culture in the developing chick embryo or in tissue culture. Although virus thus modified retains unaltered its ability to produce encephalitis after intracerebral inoculation, it progressively becomes less capable of invading the brain after peripheral inoculation. A strain of louping-ill virus attenuated in this way, so that normally not more than 10% of sheep inoculated subcutaneously developed encephalitis, proved capable of killing nearly 50% of sheep when the inoculations were made during the severe weather of last winter.

These observations call attention to the importance of the mechanism ("the blood–brain barrier") which tends to prevent spread of virus from the blood into the brain. They suggest that in these neurotropic infections one must study not only the virus but the factors which influence this spread in the individual animal under different environmental and nutritional conditions.—I am, etc.,

Frant, Kent. D. G. ff. Edward.

Sir,—I was most interested to read the letter on this subject from Dr. E. C. H. Huddy (Sept. 20, p. 468). While in India in 1944 I was medical officer to an officers' training school where we had 500 British and Indian cadets continuously in training. These cadets messed in six separate messes, which I supervised as regards cleanliness and administration, assisted by a most precise non-medical lieutenant.

We had a sudden outbreak among newly arrived British cadets of poliomyelitis. We had six cases in all, of which two died in iron lungs and four recovered with varying degrees of disability. On the assumption that intestinal infection spread the disease I ordered all eating and drinking utensils to be soaked in chlorine baths for some hours before re-use, and following the implementing of this order the spread of infection ceased. It was significant that the ordinary British Tommy (of whom there were several hundreds in the station), using his own individual eating and drinking utensils, was not affected at all by the outbreak, which was confined to the British cadet messes, where eating and drinking utensils were used communally. The fact that the last two cases occurred 17 days after the commencement of the outbreak suggests infection before the institution of the precautions described.—I am, etc.,

Burton-on-Trent. J. R. Salmond.

Disseminated Sclerosis and Poliomyelitis

Sir,—Your annotation entitled "On the Track of Disseminated Sclerosis" (Sept. 20, p. 460) was of very great interest to me, and I write because I think I can make a useful contribution to the discussion. I am familiar with the experimental work done on swayback in the Peak district under the auspices of the Derbyshire Agricultural Committee, with the help of Dr. Innes. It was thought that the problem had been solved by giving the ewes long before the birth of their lambs salt blocks containing copper to lick. Undoubtedly this treatment considerably reduced the number of cases, but anyone visiting these sheep farms and talking to the shepherds and farmers would soon be convinced that we have still a long way to go.

I think it may be admitted that the element copper is essential to the conduction of nerve energy, and when it is absent in those nerves supplying muscles we get paralysis and changes in the nerve leading to degeneration and demyelination. A copper deficiency in the soil would no doubt predispose to the paralytic condition, but the point that has been overlooked is that copper may be abundantly present, but supplanted in the nerve tissue by some other mineral.

In 1938 I made a determined effort to find the cause of fowl paralysis, and, profiting by the results obtained in swayback, I put great faith in copper. For several years the mortality from this disease had been very high, and the complaint was invariably fatal, although the bird might live for a few weeks. I determined to try one mineral after another in dilute solution injected daily into the crop. The bird was artificially fed as well. I began with a typical and unmistakable case of fowl paralysis. When copper solution had been injected for a fortnight without the slightest benefit, my assistant said: "Don't you think, sir, we have tried copper long enough? May I go on to the next mineral?" I explained I was loath to abandon copper because it was the substance from which I expected most benefit. I said: "Go on to No. 2, but continue with copper as well." The next on the list was cobalt, and the third was nickel, neither of which we had in the laboratory, but we had manganese, which we used. The bird had not had this combination of copper and manganese for more than two days before a remarkable effect was produced. It could stand up and peck. In a few days it had the appearance of a healthy bird. Its comb became red and it started to lay, giving me an egg nearly every day. We had cured fowl paralysis, but my poultry friends who had watched the experiment could not believe it. They reasoned: "As fowl paralysis is an incurable disease there must have been a mistake in the diagnosis." My reply was "If my theory is correct I can bring back the fowl paralysis." Accordingly I administered a solution of zinc sulphate, and in two days the bird was again on its side, unable to stand. I did not attempt a second cure, but killed the bird and sent the corpse to Weybridge Research Station for a report. The answer soon came: "Advanced fowl paralysis." Since that time I have treated 28 cases, and nearly half of the number have been completely cured. In half of the failures the post-mortem revealed that some other disease was present, and in the remainder probably treatment had not been started early enough. Copper by itself was ineffectual and so was manganese. It required the combination. Probably the manganese acts as a catalyst.

The conclusion I reached was that fowl paralysis is a disease in which copper in some of the nerves is displaced by another metal, usually zinc, derived from the galvanized poultry utensils so commonly used, or from lead which is present in the limestone used as a powder in the mash, and as grit. Refer

once more to swayback, I have ascertained that the soil in the Peak district where swayback is prevalent is heavily charged with lead. Is it possible that the present outbreak of infantile paralysis has a copper displacement factor in its aetiology? One mineral has been used to an extraordinary extent during the war years and since. I refer to tin. Aluminium cooking vessels were difficult to get during the war years, but since the shops have been flooded with them. Might I suggest that in each case of infantile paralysis the urine should be tested for traces of tin and aluminium?—I am, etc.,

Kenwood, Chesterfield. J. A. GOODFELLOW.

Miliary Appearances in the Lungs in Mitral Stenosis

SIR,—I was most interested to read Dr. T. E. Gumpert's article (Sept. 27, p. 488) on "Miliary Appearances in the Lungs in Mitral Stenosis." In the past year I have noted three such cases. Two of these cases had had mitral stenosis of long standing. The miliary appearances in the lungs were seen shortly before death from congestive cardiac failure.

The third case was rather different. The patient, a woman aged 36 years, was admitted to hospital in an extremely collapsed condition with cyanosis, orthopnoea, marked tachycardia, pyrexia, venous distension in the neck, and widespread adventitious sounds in the lungs. She had a previous history of rheumatic fever. *X*-ray examination of the chest showed widespread miliary appearances very similar to those seen in miliary tuberculosis. Her pyrexia was intermittent in type and proved resistant to penicillin and sulphathiazole in full doses. She had no sputum.

After four days she was put on full doses of salicylate. Her temperature subsided rapidly and her tachycardia became less marked. As it did, a well-marked mitral stenosis was discovered. She remained apyrexial though the tachycardia tended to persist. *X*-ray examination of her chest 14 days after the first film showed the lung fields almost clear. Although she remained apyrexial her convalescence was protracted, with marked tachycardia on the least exertion. She had no peripheral manifestations of rheumatic fever.

I should very much like to hear Dr. Gumpert's views on this case.—I am, etc.,

Dublin. HALDANE G. NELSON.

SIR,—I read Dr. T. E. Gumpert's interesting article (Sept. 27, p. 488) on "Miliary Appearances in the Lungs in Mitral Stenosis," but do not agree with the pathological interpretation or the radiological findings. The haemosiderin-laden histiocytes from the alveoli are motile and travel to the intralobular collections of lymphoid tissue. Here fibrous tissue reaction results in the formation of pseudo-tubercles, at first microscopic, but later increase in the amount and maturity of the fibrous tissue gives the appearances of nodulations apparent in the photograph. The rosette-like appearance he describes in the magnified photograph I should interpret as hyaline degeneration in the centre of the fibrous nodule, which is more opaque to the *x* rays than the young fibrous tissue at its periphery. The pathology is in fact extra-acinar. The diffuse haziness in the later photograph suggests interstitial fibrosis—i.e., in the interalveolar and interlobular lymphatics—seen in Whitehaven in the lungs of haematite miners from Egremont. I think if a photograph were taken now of this patient it would show the same pattern as that seen in 1946.—I am, etc.,

Belfast. MURIEL O'DOHERTY.

Early Diagnosis of Tuberculous Meningitis

SIR,—Dr. M. C. Wilkinson's call to the profession (Sept. 27, p. 507) for early diagnosis of hitherto incurable tuberculous conditions will be welcomed by all tuberculosis workers. While there is little one could add to Dr. Wilkinson's observations, I would like to call atttention to a recent work which had purely academic significance at the time of its publication, namely, that by biopsy typical miliary tubercles may be demonstrated in the bone marrow in some cases, without any changes in the C.S.F. and before radiological evidence of pulmonary invasion.—I am, etc.,

Colchester. FRANCIS KELLERMAN.

Fungus Poisoning

SIR,—The article by Mr. J. Ramsbottom (Aug. 23, p. 304), the annotation (p. 302), and the letters by Dr. C. Allan Birch (Aug. 30, p. 348) and Dr. A. T. Todd (Sept. 6, p. 395) deal with mushroom poisoning, making reference to *Amanita phalloides*. I have had occasion to observe two families poisoned by this mushroom, the full details of which I published in the *Revista Clínica Española* (1945, 17, 211). Pathologically the most striking things to be found were: intense fatty degeneration in the liver with bands of total necrosis and haemorrhagic infiltration; in the suprarenal capsules turbid degeneration in the cellules of the second and third zones of the cortex.

In diagnosis the late onset of the symptoms, almost without exception ten to twelve hours after ingestion, is of great value. The treatment of Limousin (fresh rabbit's stomach and brains) broke down in my cases, as did the intravenous glucose in large doses of Binet, and the draughts of a saturated salt solution of Le Calve, and likewise all the cardiac tonics. I was not able to give the "antiphalloid" serum treatment of Dujarric de la Rivière. My impression is that many of the cases reported as successful through various treatments are caused by other mushrooms, different from the *Amanita phalloides*, the intoxication of which I consider to be almost always fatal. I think transfusions of plasma ought to be tried.

Of the nine individuals under my observation eight died; the only survivor was a woman who had been pregnant for five months, and whose pregnancy went on successfully to its conclusion. This I believe was due to the fact that vomiting began before the others (in shortly under eight hours). In any case it would be interesting to investigate whether pregnancy embraces a state refractory to the amanita toxin, and why.—I am, etc.,

Soria, Spain. J. CALVO MELENDRO.

Treatment of Injuries following Insertion of Gastroscope

SIR,—Drs. C. M. Fletcher and F. Avery Jones (Sept. 29, 1945, p. 421) discussed the risks involved in using the flexible gastroscope. This article brings to my mind the treatment of oesphageal injuries from the gastroscope practised by me as well as the treatment of inflammatory lesions in the neck region. From 1931 until the beginning of the war I have done many gastroscopies. My results have been very good in the diagnosis of diseases of the stomach. Naturally it is necessary to make an x-ray examination beforehand to be certain there are no patnological changes in the oesophagus, stomach, or neighbouring organs. Marked kypho-scoliosis, a displaced vertebra, or marked aortic sclerosis may make an examination through the oesophagus very dangerous or impossible. One must also bear in mind that the oesophagus of older people is less elastic and more vulnerable to injury. Areas in which generally are found diverticula have a thinner pile of muscles and are easily injured. Introduction of the gastroscope must be done without pressure. Even so, injuries to the oesophagus and hypopharynx have occurred by experienced physicians, as borne out in the report by Fletcher and Jones.

In the treatment of such accidents and as well as dangerous anginal septic states—e.g., post-tonsillectomy and so on—the following method used by me has given excellent results. According to the old surgical principle of putting at rest inflamed areas—as, for example, suppuration in the extremity—I apply a padded wire splint to the patient extending over the head, neck, and back, securing it with bandages at the thorax and head and the latter about the forehead, thus preventing any side-to-side or forward-and-backward motion. In this manner all the muscles of the neck and upper parts of the oesophagus will be put at rest. Forbidding the patient from speaking and giving him only liquid food, one has produced the best conditions for localizing the inflammation and its healing. In all my cases within a few days the temperature fell, the inflammation disappeared, and the patients recovered.

This treatment is not only suitable for injuries following the gastroscope introduction but excellent results by me have also been obtained for all other inflammations in the neck region. The following case was very characteristic: A tonsillectomy performed by a specialist was followed by a septic state lasting five weeks, with fever between 38° and 39.5° C. (100.4° and 103.2° F.), greatly swollen glands of the neck, and a bad general state of

health. The splint was applied over the head, neck, and back and at the same time the patient was forbidden to speak. In three days the temperature was normal and the swollen glands disappeared. To-day sulphonamides or penicillin may be employed. At any rate fixation of the head and neck by means of a splint is an excellent treatment of inflammations in the neck region as well as injuries of the hypopharynx and upper parts of the oesophagus.—I am, etc.,

Wrocław, Poland. STANISŁAW TUSZEWSKI.

Manifestations of Malnutrition

SIR,—Reference Lieut.-Col. John Huston's letter (Sept. 20, p. 470), I feel he has not grasped the significance of the remarks of Dr. R. G. S. Whitfield and myself as regards epileptiform seizures. These epileptiform seizures were in relatively *fit* men, both in my case and in three-quarters of Dr. Whitfield's. The varying symptoms, signs, and seizures of the dying emaciated P.O.W. are tragically only too well remembered by most of us. I personally was not referring to these.—I am, etc.,

York. LENOX MACFARLANE.

Treatment of Varicose Veins

SIR,—I was interested to read Prof. A. M. Boyd and Mr. D. J. Robertson's paper on varicose veins (Sept. 20, p. 452). Ligature of the great saphenous vein and all its tributaries is well recognized, but sometimes supplementary ligature of the small saphenous vein should be undertaken at the same time. I remember one case recently when varicosities had developed from both these veins, with apparently no pathological communication. Both showed impulses on coughing, and ligature of the great saphenous alone would not have sufficed to cure the condition. There is no doubt that multiple ligatures as suggested by Prof. Boyd should be more frequently performed than is at present the rule.

The danger of deep thrombosis following injection of sclerosing fluids at the time of operation has always struck me as being very real, and I abandoned this practice some years ago. The extensive thrombosis produced by this method I found truly terrifying, and I am grateful to Prof. Boyd for showing that my fear was more than theoretical. I find that, after satisfactory ligature or ligatures as the case may require, injections may be unnecessary altogether, or at the most one or two may be done when the patient is again ambulant; injection is then much safer. I often think that the minor complaints of humanity are overlooked by research workers, but I think their satisfactory treatment is as important as more spectacular diseases.—I am, etc.,

Newcastle-upon-Tyne. F. DENIS HINDMARSH.

Causalgia of the Face

SIR,—Mr. C. H. Cullen (Sept. 13, p. 433) draws attention to what he suggests may be a possible fallacy in the reasoning which led me to conclude that in at least some cases of causalgic pain there is a pain pathway by way of the sympathetic chain. He says the stimulus I applied (pressure on, and squeezing of, the superior cervical ganglion) may not have produced sufficient efferent sympathetic impulses to give rise to pain. Mr. Cullen must therefore consider that sympathetic impulses concerned in the maintenance of normal sympathetic tone are greater in number than those produced by such stimulation, as in his view causalgic pain is produced by these normal sympathetic impulses acting on afferent nerve fibres at the site of nerve injury. It seems to me, however, that stimulation such as I carried out would produce a much greater number of nerve impulses than those normally present. Certainly pinching motor fibres produced a greater flow of nerve impulses than are concerned in the maintenance of normal muscle tone. This is so whether the nerve trunk central to the point of stimulation has been blocked with procaine or not.

Mr. Cullen concludes his letter by describing two cases in which he stimulated with a faradic current the peripheral end of a sectioned sympathetic chain without reproducing the causalgic pain that had been present. This is valuable confirmation of my own finding, the only difference between Mr. Cullen's experiment and my own being the nature of the stimulus employed. It is difficult to accept the view that stimulation with a faradic current was not sufficient to produce at least as great a discharge of nerve impulse as is required to maintain normal sympathetic tone. Surely a more reasonable conclusion from these observations is the one I drew—that sectioning the sympathetic chain had divided the pain pathway. If there should be any doubt whether such stimulation is adequate it should prove possible by means of electrical recording of action potentials to compare the number of nerve impulses maintaining normal tone with the number produced by such a stimulus.—I am, etc.,

Belfast. J. A. W. BINGHAM.

Spontaneous Haemopneumothorax

SIR,—The two cases of spontaneous haemopneumothorax reported by Dr. J. K. McMyn (Sept. 13, p. 419) are good illustrations of the usual three phases (pain, improvement, signs of internal haemorrhage) in the sequence of events first described by Koral, E. (*Amer. Rev. Tuberc.*, 1936, **33**, 185), when intrapleural bleeding complicates spontaneous pneumothorax. I think, however, that it is not sufficiently realized that the interval between the onset of pneumothorax and the occurrence of clear evidence of serious haemorrhage may be as short as a few hours.

The chief danger facing the patient who has sustained a spontaneous pneumothorax is generally stated to be a further escape of air and a valve-like action of a kinked bronchus causing a *pneumothorax suffocant*. Internal haemorrhage is a rare but equally dangerous and sometimes hardly less dramatic emergency which should be watched for in every patient who suffers a pleuro-pulmonary perforation.—I am, etc.,

Enfield, Middlesex. C. ALLAN BIRCH.

Hypoglycaemia following Partial Gastrectomy

SIR,—Dr. R. D. Lawrence's letter (Sept. 20, p. 470) calls attention to the fact that in the paper by Prof. Dunlop and myself on hypoglycaemia following partial gastrectomy (Aug. 30, p. 330) no reference is made to his previous article in the *Journal* (1936, **1**, 526). In it he describes several of the features of the post-operative blood sugar curves which we have since confirmed. His paper was entirly concerned with the hyperglycaemic phase in such curves, whereas we were particularly interested in the subsequent reactionary hypoglycaemia. Thus, in looking up the literature on hypoglycaemia we failed to note his paper on "Glycosuria of the 'Lag Storage' Type—an Explanation" (oxyhyperglycaemia), which was actually, however, very germane to our subject. We therefore owe him an apology for our oversight.—I am, etc.,

Edinburgh. J. A. L. GILBERT.

The Lazy Eye

SIR,—One sympathizes with Dr. William Moodie's concern (Aug. 23, p. 310) that the treatment of an amblyopic eye by occlusion of its fellow may result in educational backwardness and even initiate a neurosis. It is true that this treatment must inevitably subject the child to a certain amount of nerve strain and restrict its normal activities, but a grave disservice would be done to children with amblyopia if adverse criticisms of a valuable method of treatment were allowed to pass without further comment.

Dr. Moodie's suggestion that the rational treatment for amblyopia should be "optical" as it is an optical condition cannot be accepted. The essential lesion of true amblyopia lies in the psychological phase of the visual arc, a view that is confirmed by the mode of development by histological studies of amblyopic eyes, and by its response to treatment. There is ample clinical evidence that vision in these eyes will frequently improve, even late in life, under the psychological stimulus of the loss of the fellow functioning eye or following treatment by suggestion.

The statement that treatment by occlusion results in educational backwardness and may initiate neurosis requires qualification. As a group, children with squint show a high incidence of left-handedness and emotional instability, but occlusion cannot be blamed for a state of affairs which exists before the treatment is commenced. Children usually enjoy orthoptic training, and the exceptional case which does not tolerate the psychological strain of occlusion must have the treatment

modified. The objection regarding education would not arise if amblyopic eyes were treated before serious schooling began, the ideal being before 6 years of age. Unfortunately many children are not brought until later, sometimes not until young adult life, and at this stage the recognition of the existence of three types of amblyopia is a guide to the value of treatment and will avoid useless occlusion and unnecessary nerve strain.

The three types of amblyopia are:

(1) The "purposive" amblyopia associated with concomitant squint, which may be regarded as a deliberate act of suppression designed to avoid the psychic trauma of diplopia.

(2) The "passive" amblyopia resulting from failure to condition in infancy the central pathways subserving macular perception. This form is a legacy of some condition which interfered during the first two years of life with the visual acuity necessary to educate macular function—uncorrected refractive errors, congenital cataracts, infantile keratitis, ophthalmia neonatorum, etc.

(3) "Pseudo"-amblyopia in which, despite a fundus of normal appearance, developmental defects such as macular dysplasia, or acquired defects such as macular haemorrhages at birth, have made central vision impossible. These conditions are frequently termed "congenital" amblyopia and by orthoptists "intractable" amblyopia, but actually are not examples of true amblyopia.

These three types can usually be differentiated clinically, and distress to the child can be avoided if their varying response to treatment by occlusion is borne in mind.

Passive amblyopia is most satisfactory to treat, even in adult life, for there is no active desire to suppress and vision rapidly improves. Treatment of the defective vision due to pseudo-amblyopia is useless and occlusion should be stopped directly the condition is recognized. It is unfair to a child to force it to depend on an eye which is often anatomically incapable of acquiring even central fixation. The value of treatment by occlusion for purposive amblyopia lies between these two extremes. One is fighting the child's active desire to avoid binocular vision, and each case must be considered on its merits, having regard to the fact that the treatment of the amblyopia is only part of the general plan of treatment for the associated squint. In general, occlusion should be used as a routine up to the age of 12 years and tried in a tentative way after that age.

Dr. Moodie has rightly stressed the importance of not subjecting a child with amblyopia to unnecessary nerve strain, but he must recognize the equal importance of securing where possible some vision for an amblyopic eye. It is the first step towards securing the benefits of binocular vision, and, even more, it may be the means of averting the tragedy of blindness later in life should the vision of the other eye be lost from accident or disease.—I am, etc.,

Southsea, Hants. W. HEDLEY SUMMERSKILL.

Retained Placenta

SIR,—Some months ago, and again recently, you published correspondence about retained placenta. On neither occasion was a method mentioned which I have used for the last five years. It was first described to me by A. W. Andison, now of Winnipeg, and is mentioned in the Annual Report of the Liverpool Maternity Hospital for 1941. Who originated the method I have been unable to discover. I suspect it is so old that no one knows. When a mare "holds her cleanings," it is the practice in some farming communities to attach a piece of lead piping to the cord and to allow the animal to walk about at will. I do not use lead piping; the method as modified by me is to attach to the cord, by means of a length of bandage, a weight of 2 lb. (0.9 kg.). After a few minutes to allow for stretching of the cord the bandage is marked in ink where it passes over the end of the bed. In many cases, after a variable interval, the mark will be found 4–6 in. (10–15 cm.) lower than this, indicating that the placenta is now awaiting expression from the lower segment and upper vagina.

This is an "over the telephone" method. It can be used in desperate cases while the blood loss is being made good by transfusion. It can be used in cases where the general condition has not deteriorated. If the patient is fit but is bleeding, more immediate treatment, either by manual removal or intravenous ergometrine, is to be preferred. The obvious danger of this method is theoretical only. I refer, of course, to inversion of the uterus. The traction is not sufficiently strong to bring about this catastrophe. I suggest that the mechanism by which a successful result is obtained is that the empty lower segment is folded upon itself in a concertina-like manner. Stimulation of the lower segment in this way causes the upper segment to contract and expel the placenta. If the placenta has partly occupied the lower segment, as is often the case when it is retained, this concertina effect should, and in fact does, stop bleeding from the area of detachment.

However the result is produced, it is extremely gratifying to find, after waiting possibly for hours for blood transfusion to render a patient fit for manual removal, that this hazardous procedure is not required. The descent of the mark on the bandage indicates that gentle fundal pressure is all that is necessary. For recording purposes I have called this method "continuous light cord traction."—I am, etc.,

Stockport, Cheshire. WALTER CALVERT.

Planning and World Population

SIR,—In his letter (Sept. 6, p. 395) on this subject Dr. E. F. Griffith states: "Now that modern contraceptive methods are so reliable and comparatively cheap, it should be possible, by means of a well-thought-out education policy, to bring a knowledge of these matters to the women of the East." It would be just as logical to state: "Now that motor banditry is so reliable and comparatively safe (*vide* records of undetected crime), it should be possible, by means of newspaper reports and cinema films and other methods, to bring a knowledge of these matters to the men of the East," because both practices are intrinsically evil—i.e., in the acts themselves and not merely on account of their consequences.

One of man's functions as made known to him by his reason is the continuance of the race, and contraception, by frustrating this function, although using the physical act of sexual intercourse, thereby becomes intrinsically evil, and this applies to each individual contraceptive act.—I am, etc.,

London, W.C.1. G. E. PAUL.

Contact Lenses

SIR,—As a recent convert to the wearing of Hamblin-Dallos contact lenses, from my own experience I can scarcely agree less with the remarks of Mr. A. Seymour Philps (Sept. 20, p. 469). The sensation of a foreign body beneath the lids is very soon lost, and I have found that after only a month of systematic and careful conjunctival training I am now able to wear them without embarrassment up to 16 hours, with occasional removal for clearing off epithelial debris and immediate replacement. The secret for complete comfort is the use of a physiological saline eye-bath as part of the daily toilet. As a microscopist these lenses take an invaluable place in my daily work, and the sense of ocular fatigue and lid weariness experienced in my spectacle days is now relegated to past memories.—I am, etc.,

Exeter. PETER WARREN.

Salaries of Specialists in N.H.S.

SIR,—I cannot think that any difference of opinion which may have arisen over the payment of psychiatrists as compared with physicians and surgeons is due, as Dr. Northage J. de V. Mather suggests in his letter (Sept. 6, p. 398), to fluctuations in the standard of the D.P.M. as opposed to that of the M.R.C.P. and F.R.C.S. I would almost, with respect, suggest that there exists here either a confusion of thought or even a wishful thinking. Surely the D.P.M. is, with many others, a special diploma—no more and no less than that. The M.R.C.P. and the F.R.C.S. are higher qualifications and rank accordingly; they are difficult to obtain—and rightly so—without considerable postgraduate learning and experience, and the whole background which a successful candidate must possess is a wide one.

In my opinion (which I know is shared by many others) the psychiatrist would do well to aim at attaining, in the realm of medicine, something of the standard demanded by the M.R.C.P. before he embarks seriously upon his chosen specialty. There can hardly be any comparison between the M.R.C.P. and the D.P.M. The latter cannot equal (which appears to be Dr. Mather's suggestion) the former, and never was it meant to do so. If the consulting psychiatrist is to rank as does the consulting physician, he should in my view possess both the higher qualification and the diploma of his own specialty.—I am, etc.,

London, W.1 MAURICE L. YOUNG.

The Extent of Neurosis

Sir,—I seem to have been more fortunate than Drs. L. F. Donnan (Sept. 6, p. 396) and H. G. St. M. Rees (Sept. 20, p. 468), as my figures for neuroses (and psychoses) are far less than their estimates. In his book *The Common Neuroses* T. A. Ross stated that investigation over 1,000 consecutive insurance cases showed 33⅓% were neurotic. It was to verify this figure that I started to keep records. Most of my colleagues would say I was biased towards psychiatry. During my Army service I went into psychiatry, as I felt such knowledge and experience would be invaluable in general practice. I submit all my neuroses to psychotherapy, and a consultant psychiatrist is called in when necessary. The time taken in dealing with psychoneurotics is very considerable, and they certainly appear more numerous than is actually the case.

My diagnoses were put down under the headings of medical, surgical, obstetrical, and neuropsychiatric. Since Jan. 1, 1947, I have made a total of approximately 9,000 consultations and visits. Of this, 66% were medical, 16% surgical, 5% obstetrical, and 14% neuropsychiatric.

I would stress the point that any assessment of this nature is bound to be very approximate, as there are so many variables. In the first place in any disease there is an upset of both psyche and soma. Even a streptococcal sore throat, so typically somatic, carries with it a certain degree of anxiety. Secondly, the diagnosis of a functional complaint is not as easy, or as readily confirmed by scientific test-tube medicine, as are somatic disorders; and I suggest that, in the present state of our knowledge, if six partners made an estimate of neurosis in the same practice, each would give a different figure. Thirdly, the locality definitely influences the incidence of neurosis. In one isolated row of miners' cottages here most of the women (*not* the men) are neurotic. Buses are few and far between, shopping is most difficult, and there is no social life. Housework and having babies are the only occupations open to the female population, and many crack under the strain.

On the whole our rural community here is a very fortunate one in these hard times. Gardens, fowls, and the back-yard pig eke out the rations. Half the population are miners and have no fuel difficulties. There are a dozen industries in the district, so that the young people have a reasonable choice of work. Social life could be much better, but sport, dances, and the cinemas do offer scope for leisure hours. Perhaps it is this happy combination of circumstances which makes the figures for this area lower than for most places.—I am, etc.,

Ibstock, Leicester. C. A. H. Watts.

Sir,—Dr. D. Yellowlees's letter on the subject of the inadequate treatment of the neurotic (Sept. 20, p. 468) is provocative—no doubt intentionally. When I started in general practice I held views very similar to his on the subject. I have referred as many as possible of these patients to the psychiatrists. So far the results are, roughly: cured, nil; improved, nil. The attitude of the patient on returning from "adequate treatment" is, "Now, after this somewhat mystifying interlude, let's get a bottle of medicine."

I am grateful to the psychiatrists for considerable help in diagnosis, and for taking the patients off my hands, but I am becoming convinced that they are quite as impotent as the G.P. in removing the underlying causes of neurosis.—I am, etc.,

Beaminster, Dorset. Arthur Dearlove.

Dyspepsia and Aspirin

Sir,—Now that the incidence of upper respiratory infections is increasing I feel that it is no coincidence that the number of patients complaining of dyspepsia is also increasing. Proprietary preparations containing acetylsalicylic acid are numerous, and the usual story is, "I've had a cold, Doctor, and it's settled on my stomach." Invariably I find that self-medication with one of the above is the cause of the dyspepsia.

There are few ulcer patients who can tolerate acetylsalicylic acid, and yet year after year so many of them are allowed to suffer winter exacerbations due to failure to warn them of the danger of such drugs. The odd thing is that so few patients discover this for themselves, yet so readily agree when it is pointed out to them. I have a patient in whom even gargling with aspirin is sufficient to cause a relapse owing to the fact that even a few grains are inadvertently swallowed.

Calcium aspirin is not the answer to all patients who wish to treat themselves for a headache or simple cold. So far I have found that phenazone 5–15 gr. (0.32–1 g.) seems to be harmless. Recently, having seen a severe haematemesis in an aspirin-sensitive patient, I feel that it is not too early to advise all dyspeptics to avoid any drug containing acetylsalicylic acid. The characteristic of dyspepsia so caused seems to be its stubbornness in reacting to the usual alkalis. I might end by pointing out that the "stomach trouble" so often complained of by sufferers from migraine frequently has a similar aetiology—I am, etc.,

St. Helens, Lancs. James Kay.

POINTS FROM LETTERS

Acute Haemolytic Anaemia (Lederer type)

Dr. G. A. D. writes: With reference to Dr. G. Papayannopoulos's communication on the above subject (Sept. 6, p. 371) I write in the hope that my personal experience may help in earlier diagnosis and also to support the infective theory of origin. From Sept. 3, 1939, to Aug. 1, 1945, I had done two doctors' work and was a bit tired but in reasonable health. On Aug. 1, I felt a persistent nausea and abhorrence to food. On Aug. 2, I had to take charge of a cadet camp for 300 which I could not leave and so remained at my post for 10 days. On Aug. 3, I passed dark red urine in the morning. On Aug. 4, I was so breathless I could not walk the length of the field. On Aug. 5, my hands became jaundiced in the palms. On Aug. 7, I thought I heard a gas engine running, but soon realized it was a drumming in my own head. Any exertion caused breathlessness, and gradually my limbs became weaker until Aug. 18, when I consulted a heart specialist, who found tachycardia and advised consulting a haematologist, whom I saw on Aug. 20, who diagnosed Lederer's anaemia. My haemoglobin was then 19%; no megaloblasts, no oedema, and no splenic enlargement were present. During the following week a swinging temperature made me finally take to my bed, and within a week, in spite of liver injections, iron, etc., I became unable to lift my head from the pillow and went to the Bristol Royal Infirmary by ambulance almost unconscious. Following 6 blood transfusions, I gradually made a complete recovery. May I emphasize that the onset, while it appears acute, is not so much sudden as obscure, insidious, and unusual, and is not recognized by patient or doctor, as a rule, to be of serious import. In addition, the continual drumming noise in the head renders the patient completely mentally bewildered, causing a definite lack of appreciation of the seriousness of the symptoms, or their progressive nature. The nausea, "head noises," dullness of visual and mental perception, the breathlessness and asthenia, are so easily confused with nervous exhaustion due to overwork, etc., that it is not until the jaundice, fever, and red urine appear that the diagnosis is made and the life-giving blood transfusions commenced.

Poliomyelitis

Dr. J. C. Jones (London, S.E.25) writes: May I be permitted to indicate a line for the treatment of infantile paralysis that I used in previous epidemics which appeared to give a very rapid cure from the paralysis if given immediately after the pyrexial stage had ended. . . . As soon as the temperature is flat and the paralysis has happened, the patient is at once put on to full doses of strychnine in relation to the age of the patient. This is given for 24 hours, when the dose is increased to 1 min. (0.06 ml.) above the maximum dose. After the next 24 hours the dose is raised again by 1 min., and so on. . . . My experience was that before the dose got dangerously high there was sufficient improvement for one to be able to form a judgment. My opinion is that one should be prepared to push the dosage if necessary until three times maximum is reached. This presupposes that there are no contraindications and that the patient is kept under close observation. Of this I feel confident, that maximum doses are useless, that the cure is established only on the level of over double maximum dosage. . . .

Symptoms of Varicose Veins

Dr. A. P. Bertwistle (Dumfries) writes: In their excellent article on "Treatment of Varicose Veins" (Sept. 20, p. 452) Prof. A. M. Boyd and Mr. D. J. Robertson rightly stress lack of pain, save when phlebitis is present. They do not, however, mention a somewhat distressing symptom—namely, a sense of weight and dragging; the limb seems to tire with the least exertion.

Bodies for Dissection

D. M. A. (Birmingham) writes: There is a Cremation Society in existence for those who favour cremation, and I should like to see a Body Donors' (or some other suitably worded title) Society formed in this country.

Obituary

E. ff. CREED, M.A., D.M., F.R.C.P.

Edward ffolliott Creed, who was the second son of the late Rev. E. Creed, died suddenly on Sept. 27 after a myocardial infarction at the age of 54. He entered Trinity College, Oxford, in 1910 as a Millard Scholar, and took honours in the Final School of Natural Sciences (Chemistry) in 1913. Going on to King's College Hospital Medical School as a Burney Yeo Scholar, he took the B.M. degree in 1916, and served in the R.A.M.C. as a captain, working on malaria problems at Sierra Leone. His early experience and training in scientific laboratory work led him to the pathological department at King's on his return from war service, and he was appointed bacteriologist. On the retirement of Dr. d'Este Emery in 1921 Creed was appointed director of the pathological department, and director of pathological studies in the medical school.

Always keenly interested in the clinical side of pathology, he took the M.R.C.P. in 1923, being elected F.R.C.P. in 1932. He proceeded D.M. in 1927. His disposition was rather quiet and retiring, but in matters which concerned him, his work, or his department he could always state a case with logic and vigour. His shrewd common sense, precise outlook, and retentive memory made him a capital chairman of committees, so that in hospital affairs his advice was always welcomed, and was always the product of sound judgment and balanced consideration. As a teacher the qualities of lucidity and careful preparation were notable in his lectures. Although a hard worker for long hours, he always had time to explain the technical side of any problem and to give useful suggestions as to some line of investigation. To the clinician a chat with Creed about the pathological aspects of some puzzling case was stimulating and instructive. As an examiner his sane judgment made his conclusions fair to the candidates and helpful to his colleagues. His knowledge was wide and his memory excellent, and one rarely turned to him in vain for accurate and helpful information. For young workers in his laboratory it was a privilege to enjoy the time he would always gladly spend on demonstrating a section or explaining a technique. Nothing was too much trouble for Creed in these matters; and I well remember the pains he took in revealing to me the then complex mysteries of the Wassermann reaction twenty-five years ago.

Creed was not a voluminous writer, but his small output was of high quality. Nothing but the very best would satisfy his fastidious standards or reach his level of meticulous accuracy. Here was an excellent example both to the clinician who sought his advice and to the young pathologist learning his trade. Although mainly interested in bacteriology, he was also attracted to haematology, and carried out some ingenious researches on acholuric jaundice. His early training in chemistry gave him a good appreciation of biochemistry and a long experience of necropsies for coroners completed his equipment in morbid anatomy. He was, indeed, an all-round pathologist in a sense that is likely to become rare in the future as specialization divides the subject still more deeply. His colleagues, who were all his friends, will find him hard to replace. Those informal chats in his room, on a hundred and one subjects, always stimulating and instructive, and seasoned by his lively humour, will be sadly missed. All will sympathize with his widow and two daughters.—T. E.

A memorial service for Dr. Creed was held in the Hospital Chapel at Denmark Hill, on Oct. 8.

H. COURTNEY GAGE, M.R.C.S., L.R.C.P.

Dr. Harold Courtney Gage, director of the radiological department of St. Mary's Hospital since 1935, died in London on Oct. 4, a few days before his sixty-second birthday. Before 1914 Gage worked with Sir James Mackenzie Davidson, one of the pioneer radiologists in this country. He went to France with the Essex Yeomanry, was wounded early in the war, and was invalided out of the Army. Before long he was back in France with the American Red Cross as an *x*-ray technician, and he was responsible for a great deal of radiographic work on war casualties; he also assisted at two large French civil hospitals near Paris, and the French Government made him Officier de l'Instruction Publique. He originated a number of techniques for the investigation of spinal injuries and the localization of foreign bodies, which were described in the *Journal de Radiologie* in 1916–18.

Courtney Gage joined St. Mary's Hospital Medical School in 1919 and qualified in 1924. He came to medical radiology with an unrivalled technical experience behind him, and was elected assistant honorary radiologist at St. Mary's Hospital in 1926. He became director of the radiological department in 1935, holding this appointment until his death. He was honorary radiologist to the Hampstead General Hospital from 1925 to 1939, and consulting radiologist to St. Luke's hospital for many years. He served with distinction on the councils of the British Institute of Radiology and of the Section of Radiology of the Royal Society of Medicine. Although invited to become president of both these bodies, he declined since he felt he could not preside effectively because of his deafness, which grew worse about 1934.

He was the honorary editor of the *British Journal of Radiology* from 1940 to 1943, and no one could have given more care and attention to its publication. The Institute made him an Honorary Member, a rarely bestowed honour, in 1943 as a token of appreciation of his devoted work. He was a founder Fellow of the Faculty of Radiologists and the first examiner in diagnostic radiology in the fellowship examination. He also served on the British *X* Ray and Radium Protection Committee, and was a member of the council of the Medical Defence Union.

During the second world war Gage did as much as any other worker to bring "mass miniature radiography" to a high standard. He gave devoted service to the Norwegian Forces in Britain, and for this work he was created a Knight of the Royal Order of St. Olaf (in the First Class) by King Haakon of Norway. As a radiologist Courtney Gage was held in high esteem by both his clinical and his radiological colleagues; his advice was constantly sought and was always most willingly given. His opinion was always of the greatest practical value, and though his academic knowledge was seldom aired it was indeed profound. As a teacher he gave his time unsparingly to postgraduate students, and many radiologists in this country and in the Dominions, especially in New Zealand, would acknowledge their indebtedness to Gage.

His outstanding characteristics were perhaps his devotion to the service of others, his quiet and determined thoroughness, and his kindliness. No one could have been more considerate of the opinions and feelings of others. Away from his professional work Gage was devoted to music. The most successful musical society at St. Mary's Hospital grew out of the gramophone recitals Gage gave to those on duty during the London air raids. He was also a great authority on photography and a skilled photographic craftsman. Perhaps Gage was happiest of all when he was entertaining a few friends. He was an excellent host and delighted in the preparation and service of a perfect meal. He bore his final illness with resolution and fortitude.

C. M. BEADNELL, C.B., M.R.C.S., L.R.C.P.

Surgeon Rear-Admiral C. M. Beadnell died at Petersfield, Hants, on Sept. 27, at the age of 75, after a short illness. He was appointed C.B. in 1924, and made honorary physician to H.M. the King a year later.

Charles Marsh Beadnell was born on Feb. 17, 1872, in a military camp at Rawalpindi. The eldest son of Major C. E. Beadnell, R.A., he was educated at Cheltenham College and Guy's Hospital. He qualified in 1895 and entered the Royal Navy in the following year. He volunteered as a surgeon in the American-Filipino war and was landed with American troops on the island of Luzon, where he saw much fighting In 1899 he was in action with the Naval Brigade in South Africa and was mentioned in dispatches three times. For these services he was awarded eight years' special accelerated promotion to staff surgeon. When H.M.S. *Renown* was conveying the King and Queen of Spain to the Continent in 1907, Charles Beadnell was the medical officer of that ship. He also served in H.M.S. *King Alfred*, the flagship on the China station. He was on active service again as S.M.O., 2nd Cruiser Squadron, in the war of 1914–18. He was for three years the Naval

Member of the Medical Consultative Board of the Admiralty, and from 1923–6 he commanded the R.N. Hospital at Chatham.

Admiral Beadnell was a man of wide and varied interests. As a young man he collected human skulls showing the effects of gun-shot wounds. He wrote papers, pamphlets, and books on such subjects as small-bore projectiles, disposal of casualties in naval warfare, environmental factors afloat, the evolution of speech, and the origin of the kiss. He compiled a dictionary of scientific terms and an encyclopaedic work on science and war. His special interest in evolution made him a rationalist early in life; indeed, before he left Guy's Hospital he confessed that he was "a devout agnostic." His views, of course, were not universally acceptable, but his sincerity and tolerance often disarmed criticism. He had been a member of the British Medical Association for over fifty years, and for many years past he had been one of our most constant correspondents. The last letter of his to appear in the *Journal* was published as recently as Sept. 13. After his retirement Admiral Beadnell became a director of the Rationalist Press Association, and later its president. He married Ellen Louisa, daughter of George Bailey, of Gloucester, who survives him.

Dr. Edward George Perodeau died at the age of 81 at his home in Twickenham on Aug. 22. Dr. Perodeau was a student at University College Hospital, and he graduated in 1904, proceeding M.D. in 1912. He was for a time clinical assistant at the ear and throat department of the Royal Northern Hospital. Since 1914 he had acted as medical officer to the Metropolitan Water Board, and he had been associated for nearly forty years with St. John's Hospital, Twickenham, as consulting physician and latterly as chairman of the medical staff. Dr. Perodeau had been a member of the British Medical Association for over forty years and was chairman of the South Middlesex Division in 1922. He was seeing patients up to the day before his death, and only a week previously had spent a few days in his caravan trailer on Box Hill. He was one of the oldest members of the Camping Club of Great Britain.

Dr. James York Moore died at Worthing on Sept. 10 at the age of 56. Dr. Moore, who was a student of Guy's Hospital, qualified in 1913 and was in general practice near Sawston, Cambridge. During the first world war he served with distinction in France and Gallipoli, and was awarded the O.B.E. After the war he remained in the Service for a short time before settling in general practice in Sawston. In 1939 he rejoined the R.A.M.C. and went to France with the first expeditionary force. After the evacuation of France he served as A.D.M.S. for the Surrey and Sussex areas. He reached the rank of colonel, but was invalided in 1945, when he developed progressive muscular atrophy. Although considerably handicapped he returned to practice, but his condition deteriorated so rapidly that he had to retire at the end of 1946.

Dr. L. A. Parry writes: I first met Colonel York Moore during the last war when he was A.D.M.S. stationed at Hayward's Heath and I was liaison officer between, first, the Canadian Army stationed in Sussex and, later, the 21st Army group and the E.M.S. We came frequently and intimately in contact. During our many meetings, both at Hayward's Heath and at the various hospitals throughout Sussex which we visited together, I was struck by his invariable good temper and courtesy, his admirable method of carrying on his duties and his work, his tactfulness, his care of, kindness to, and thought for the wounded he saw in hospital, and his general sturdy bearing of a man doing his work and his duty in such a satisfactory way under such great strain. All of us who came in contact with him will remember him as the soul of kindness. We all valued him as a man well worth knowing and working with. We regret very deeply the passing of a beloved friend.

J. D. S. writes: York Moore was really a fine country general practitioner. He was intensely interested in all branches of medicine and always kept abreast of modern developments. A deeply religious and philanthropic man, he was always ready to help with any activity in his village community. The "Ox-Roast" which he organized is well remembered to-day. He was secretary of Cambridgeshire Insurance Committee for many years, and during his last year of practice he entertained his colleagues as president of the Cambridgeshire and Huntingdonshire Branch of the B.M.A. His many friends both within and outside the profession and his village of Sawston will miss him sadly. He leaves a widow, a son who is also qualified and serving in the R.A.F., and two daughters who are nursing.

C. F. S. writes: No reference to the late Mr. Ernest Miles would be adequate without special mention of that masterpiece of surgery, the abdomino-perineal excision of carcinoma of the rectum. It is not too much to say that there are many thousands of people to-day enjoying good health, able to work and lead an ordinary life, who not so long ago would have been condemned to a miserable, painful, and lingering death. Not only did he himself bring the technique of the operation to a high degree of perfection but he was always only too glad to teach others; no young surgeon ever went away from seeing him without some friendly advice and encouragement. Although Miles's work was widely known and appreciated abroad, especially in the United States and Canada, I feel that it never received the recognition it should have done in his own country. Perhaps it is not generally realized that he was essentially a shy man and quite incapable of seeking the limelight. His large and extensive practice was due not only to his outstanding skill and ability but also to his natural courtesy and kindliness of manner and to the unremitting care and attention he gave to all his patients, whether in hospital or in private practice.

Medico-Legal

DESERTION BY THE FEEBLE-MINDED

[From our Medico-Legal Correspondent]

The case of *Brown* v. *Brown*[1] illustrates the bewildering difference of outlook which occasionally shows itself between the legal and the medical mind, especially in mental matters. A woman deserted her husband in March, 1938, and in the following October she was charged before magistrates with stealing, found on medical examination to be feeble-minded, was certified, and was sent for a short time to a colony. She was then released on licence to the care of her mother. In 1945 the husband petitioned for divorce on the ground of her desertion for over three years, but the wife's advisers answered that, as a certified mental defective, she could not be considered capable of forming an intention to continue the desertion. They pointed to the earlier case of *Williams* v. *Williams*,[2] in which the Court of Appeal had held that a person certified of unsound mind must be regarded as incapable of forming the intention to desert or return, and that evidence of his actual state of mind is inadmissible. The President of the Divorce Division, Lord Merriman, would not accept this analogy, but held that the wife was capable of forming the necessary intention and granted the husband a decree of divorce. In doing so he came to a decision with which no reasonable person will quarrel, but the grounds on which he reached it are enough to drive a medical mind to despair.

Lord Merriman said that under the Lunacy Act, 1890, a lunatic is defined as "an idiot or person of unsound mind." By the Mental Treatment Act, 1930, the word "lunatic" is replaced by "person (or patient) of unsound mind." Meanwhile the Mental Deficiency Act, 1913, amended by the Act of 1927, dealt with idiots as the lowest of four classes of mental defectives of which the definitions are framed on a diminishing scale, the other three being imbeciles, feeble-minded persons, and moral imbeciles. Therefore, said the President, a feeble-minded person is three statutory removes from a person of unsound mind, and, though a person who is certified as of unsound mind cannot form an intention to desert, no such presumption need attach to one who "is not of unsound mind but is merely a mental defective and in the third category of such persons . . . three degrees lower in the scale of mental illness."

With the greatest respect to the learned President, this assessment of volition by categories, beginning with the certified mental patient who is allowed none at all and progressing through idiots and imbeciles to moral defectives, though doubtless correct in law, bears little relation to reality. Volition can be assessed only by examining the individual patient. The law already does this when a certified mental patient is accused of a crime, and when one has made a will. That it should not also do so in divorce matters is an anomaly.

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[1] 1947 2 All E.R. 160.
[2] 1939 3 All E.R. 315.

Universities and Colleges

UNIVERSITY OF SHEFFIELD

The following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—J. H. Blaskey, J. A. Chisholm, Elinor Dubas, D. Hobson, A. H. Morris, J. B. Parkin, D. Rider.

UNIVERSITY OF LEEDS

The following candidates have been approved at the examinations indicated:

M.D.—E. C. Armstrong, P. D. Bedford, M. Braithwaite, M. H. Calverley, J. Dawson, O. G. Jones, J. McKennell, I. G. W. Pickering, E. E. Rawlings, P. A. H. Rivett, D. E. H. Robertson, W. S. Suffern, R. Varley.

FINAL M.B., CH.B.—*Part I* (*Pathology and Bacteriology, Pharmacology*): C. Brierly, E. M. Chippindale, J. W. Daggett, P. H. Daley, N. J. Dowdall, R. England, E. E. Green, C. M. Inebnit, W. R. Shanks, O. J. Sharp, M. C. Simpson. *Part III* (*Medicine, Surgery, Obstetrics and Gynaecology, Therapeutics*): [2]J. A. Holgate, V. A. Bell, M. Benard, R. M. Bowker, K. A. Exley, J. A. Gawthorpe, M. J. Glover, A. E. W. Gregson, J. K. Hardy, B. Jennings, G. A. Kitching, B. G. Peet, J. H. Rust, J. Samuel, B. K. Scott, J. D. Thornton, G. C. Turner, J. M. Vella, J. K. Walke., N. M. Whalley.

[1] With distinction. [2] With first-class honours.

UNIVERSITY OF DURHAM

The title of Emeritus Professor of Surgery has been conferred on John Hamilton Barclay, M.D., M.S., F.R.C.S., who retired from the Chair in January.

UNIVERSITY OF EDINBURGH

Prof. N. Hamilton Fairley, M.D., F.R.S., F.R.C.P., Director of Special Research, Hospital for Tropical Diseases, London, will deliver the Cameron Prize Lecture for 1947 in the Anatomy Lecture Theatre, University New Buildings, Teviot Place, Edinburgh, on Friday, Oct. 24, at 5 p.m. His subject is: "Chemotherapy in Malaria." All students and graduates are invited to attend the lecture.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

In view of the Government's decision about dinners, it has been reluctantly decided to cancel dinners of Fellows on the nights before comitias. The October dinner, therefore, is cancelled; the possibility of holding dinners will be reconsidered later in the year.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following lectures will be delivered at the College (Lincoln's Inn Fields, W.C.): Thursday, Oct. 16, 3.45 p.m., Surgery Lecture by Prof. John H. Garlock, Surgical Treatment of Carcinoma of the Oesophagus and Upper Stomach; Friday, Oct. 17, 5 p.m., Hunterian Lecture by Prof. Murray A. Falconer, A Study of Principles and Results of Lumbar Intervertebral Disk Surgery; Wednesday, Oct. 22, 5 p.m., Arris and Gale Lecture by Mr. H. F. Lunn, A Contribution to the Anatomy of Inguinal Hernia; Friday, Oct. 24, 5 p.m., Arnott Demonstration by Mr. Lunn, The Pelvis and the Erect Posture; Monday, Oct. 27, 5 p.m., Arnott Demonstration by Mr. Lunn, The Applied Anatomy of Testicular Descent; Tuesday, Oct. 28, 5 p.m., Arnott Demonstration by Mr. Lunn, The Cerebral Cortex and the Status of Man; Wednesday, Oct. 29, 5 p.m., Moynihan Lecture by Mr. W. R. Douglas, Surgical Treatment of Metastatic Carcinoma of the Cervical Glands; Thursday, Oct. 30, 5 p.m., Imperial Cancer Research Fund Lecture by Dr. James Craigie, Viruses, Self-producing Substances and Tumours. The lectures are open to those attending courses in the College and to all other medical practitioners, dentists, and advanced students.

At an extraordinary meeting of the Council of the College, held on Sept. 22, with Sir Alfred Webb-Johnson, Bt., President, in the chair, the Hallett Prize was awarded to Dr. Nanalal Jivan Shah (Guy's Hospital).

It was decided that the additional six months' period of surgical training of candidates for the Final Fellowship examination should take effect as from Jan. 1, 1949.

It was resolved not to hold the Buckston Browne Dinner in 1947 on account of the food crisis.

A Diploma of Fellowship was granted to F. J. A. H. Blackwood (St. Thomas's Hospital).

A Diploma of Membership was granted to J. B. Binks (Birmingham).

A Diploma in Public Health was granted, jointly with the Royal College of Physicians of London, to A. McFarlane (Glasgow).

Diplomas in Tropical Medicine and Hygiene, in Ophthalmic Medicine and Surgery, and in Physical Medicine were granted, jointly with the Royal College of Physicians of London, to the following successful candidates:

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—G. T. Allen, J. H. C. Clarke, P.-L. Lim, H. J. A. Richards, W. P. Stamm, and to the candidates whose names were printed in the *Journal* of Aug. 23 (p. 313).

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.—S. Adler, L. P. Agarwal, R. M. Archer, N. K. Barber, J. Bienkowski, M. W. Bird, W. G. Bridges, K. B. Brown, R. A. Burn, Helena B. A. Casey, D. Christison, C. A. G. Cook, E. H. L. Cook, B. C. Curwood, L. W. Davies, E. A. Donegan, G. F. Ensor, K. B. Forsyth, D. P. Greaves, T. S. S. Gregory, F. B. Halliday, H. J. Hamelberg, J. M. Heller, C. R. S. Jackson, N. S. Jain, Sarah J. Jenkins, T. S.-B. Kelly, P. J. M. Kent, D. A. Langley, Marion McArthur, P. H. N. Matthews, W. S. Milne, D. G. Mody, E. S. Perkins, J. S. Phillpotts, F. C. Rodger, Maeve Rusk, M. H. M. Ryan, Q. R. Schindler, D. T. Shortridge, F. N. Shuttleworth, D. G. Simpson, C. S. Smalley, J. L. S. Smith, C. H. H. B. Sparrow, G. Sutherland, W. M. Walker, Nina S. S. S. Warwick, S. E. White, Eunice M. Wilson.

DIPLOMA IN PHYSICAL MEDICINE.—A. C. Boyle, M. C. Woodhouse, A. Zinovieff.

The Services

Surgeon Lieutenant-Commander R. E. C. Copithorne, R.N.V.R., has been awarded the R.N.V.R. Officers' Decoration.

Captain W. F. Smith, R.A.M.C., has been awarded the Long Service and Good Conduct Medal, without gratuity.

Major J. P. Parkinson and Captain (Honorary Major) W. A. Bellamy, R.A.M.C., have been awarded the Efficiency Medal (Territorial).

The following appointments and mentions in dispatches have been announced in recognition of gallant and distinguished services while prisoners of war in the Far East:

M.B.E. (*Military Division*).—Major G. A. Graham, Major (temporary) B. M. Wheeler, Captains J. J. Woodward and J. P. Zachariah, and Lieutenants R. K. Saksena and T. A. J. Wickham, I.M.S.

Mentioned in Dispatches.—Major T. F. O'Donnel, Captains B. B. Choksi, R. S. Gupta, and P. M. Kirkwood, Jemadars I. S. Bedi and R. Ullah, I.A.M.C.

DEATHS IN THE SERVICES

Flying-Officer CHARLES JOHNSON was killed in a flying accident on Sept. 17. A student of Durham University he graduated M.B., B.S. in December, 1945, at the age of 22. After a period as junior resident at the Royal Infirmary, Sunderland, he was granted a commission in the Medical Branch of the R.A.F. almost exactly a year ago. At the time of his death he was serving as medical officer at a Royal Air Force station in England.

Col. GEORGE KEITH FULTON, C.B.E., graduated M.B., Ch.B. at Glasgow in 1917 and before joining the R.A.M.C. was a house-surgeon at the Glasgow Royal Maternity and Women's Hospital.

Lieut.-Gen. Treffry O. Thompson writes: The sudden death of Col. George Fulton was a great shock and loss to those who had worked with him or known him well and a great loss to the Corps to which his life's work had been given. He had proved himself to be a great hygienist, both in peace and war. His knowledge of hygiene and preventive medicine was profound and wide, more particularly of course in its application to the armed Forces of the Crown and of India. But apart from mere knowledge he had that inestimable gift of common sense in the application which led to success in his contacts with every type of man and woman, and in his achievement of raising the hygiene of the Forces to a level second to none. Before his death he had the satisfaction of completing, among many other activities, two works typical of his determined energy and enthusiasm: the co-ordination of the multiple complicated documents which afflicted the medical services of the three armed Forces in India, and the 1946 Annual Hygiene Report, the last of the reports for the Army in India. The latter places on record the work of the hygiene branch and the preventive medicine of the medical services of India which, as deputy director of hygiene and pathology at General Headquarters, India, he so ably led to the end, and, in fact, shows that "records" in preventive medicine have been achieved. The sick rates and particularly the malarial rates for the Army in India constitute low records which have never before been achieved. George Fulton had the satisfaction of knowing that he himself had been very largely instrumental in producing those records and that excellent standard of health. He did a grand job and died peacefully in full harness.

The Minister of Health recently met at his personal invitation the members of the Regional Hospital Boards and discussed with them some of the problems that may occur. Mr. Bevan said that it was best to bring the members together at the start so that they might see themselves as part of a great health service—an integrated service in which they would not live in separate compartments.

No. 38

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 20.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	35	6	17	3	—	36	3	12	1	1
Deaths		—	—				1	—		
Diphtheria	189	13	50	6	8	240	16	78	24	16
Deaths	2	—	—	—	—	3	2	1	—	—
Dysentery	100	18	25	1	—	66	14	22	1	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	3	—	—	—	—	1	—	2	—	—
Deaths										
Erysipelas			32	7	2			43	4	3
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				92					60	
Deaths	82	4	30	9	6	38	3	10	9	8
Measles*	1,066	48	53	84	2	1,208	82	61	29	2
Deaths	2	—	—	1	—	1	—	—	—	—
Ophthalmia neonatorum	55	6	4	—	—	69	8	15	—	—
Deaths										
Paratyphoid fever	23	2	6 (B)	—	—	17	—	7 (B)	1 (B)	4 (B)
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	252	8	—	3	1	312	10	1	1	—
Deaths (from influenza)†	1	—	—	—	—	5	1	2	—	—
Pneumonia, primary			141	20				117	12	
Deaths		12		5	7		18		5	2
Polio-encephalitis, acute	23	1				3	—			
Deaths		—					—			
Poliomyelitis, acute	571	53	148	11	10	28	1	2	1	—
Deaths		—					—			
Puerperal fever		—	10		—		—	18		—
Deaths										
Puerperal pyrexia‡	115	8	8	1	1	106	6	11	—	1
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	805	57	142	21	44	853	71	158	16	40
Deaths	—	—	—	—	—	—	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	16	4	4	3	2	13	—	1	2	—
Deaths	—	—	—	—	—	1	1	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,378	131	38	51	6	1,610	110	105	25	24
Deaths	9	—	1	1	1	6	—	2	—	—
Deaths (0–1 year)	348	29	67	23	15	352	40	57	31	11
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,721	579	517	147	114	3,838	612	491	163	97
Annual death rate (per 1,000 persons living)			10·7	9·3				10·8	10·4	
Live births	8,350	1395	960	452	253	8,617	1301	1082	428	273
Annual rate per 1,000 persons living			19·3	28·5				21·8	27·4	
Stillbirths	209	23	32			266	41	29		
Rate per 1,000 total births (including stillborn)			32					26		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Poliomyelitis

The number of notifications of poliomyelitis in England and Wales in the week ended Sept. 27 was 441 (571) and of polio-encephalitis 32 (23). The figures for the week ended Sept. 20 are given in parentheses. Thus there was a fall of 130 in the notifications of poliomyelitis and a rise of 9 in those of polio-encephalitis. This is the largest fall in notifications since the epidemic began. Both in 1938 and in 1926, when there was a high prevalence, falls in incidence occurred in September but were followed by increases in early October. It is therefore too early to assume that the incidence will continue to fall, though the fact that the high incidence started early may be some justification for hoping that the decline may come early also.

The decline in London continued 30 (53), but figures for admissions to London hospitals since Sept. 27 suggest that the fall may not be so marked when the next weekly figures become available. Most of the counties showed decreases, the principal exceptions being Bedford 6 (3), Cheshire 15 (11), Lincs (Lindsey) 16 (8), and Carmarthen 6 (2). The general picture is one of some decline, which is perhaps a little more noticeable in the South than in the North.

Poliomyelitis in Germany

In July of this year a small outbreak of poliomyelitis was reported in the Friedrichshain district of Berlin. A score or more cases were limited to a block or two in this district. The incidence increased steadily and fresh notifications began to come in from all districts, although the majority still came from Friedrichshain and Lichtenberg in the eastern part of Berlin. By Aug. 17 the notifications had reached a total of just over 300; within a period of ten days this figure was more than doubled, and in one day there were as many as 69 notifications. The average daily number of notifications is now 18.

The clinical features of the present epidemic are unfamiliar to Berlin physicians. There are not so many cases of frank paralysis as in former epidemics, and bulbar or meningeal signs are more frequent and tend to be associated with paresis of the third, sixth, and seventh cranial nerves. The age-incidence is as follows:

Age		Age	
0– 3 years	7.5%	10–16 years ...	17.3%
3– 6 „	26.9%	16–20 „ ...	7.3%
6–10 „	24.5%	Over 20 „ ...	17.2%

The highest proportion of fatalities is in the over 20 age group and largely in the better fed. In the ten weeks ending Sept. 29 there were 1,347 cases notified, with 118 deaths. Over this same period the incidence rate per 10,000 population was 19.0. Figures for former outbreaks in Berlin are given as: 1926—121 cases; 1933—213; 1937—460; 1939—359; 1941—472; 1942—274; 1943—149; and in each of the last three years there have been fewer than 100 cases.

In the present epidemic in Berlin, with a population of 3,300,000, the distribution of cases is as follows:

	Cases	Deaths
Russian Sector	782	75
U.S. Sector	314	25
British Sector	147	11
French Sector	104	7
Total	1,347	118

Patients with poliomyelitis are being treated in special hospitals by teams of physicians, orthopaedic specialists, and physiotherapists. Penicillin has been made available for cases complicated by pneumonia. A poliomyelitis commission has been flown over from America, and these experts have given advice and material aid to the German hospitals. Iron lungs have also been flown in from the U.S.A. The German officials could easily have had "iron lungs" made up from scrap material, but they are slow in showing initiative of this sort. Some German physicians have been experimenting with insulin in certain cases; the rationale of this treatment is not known at present. Swimming-baths have been closed and the German authorities have been instructed to examine sewage farms and the like in regard to the possible spread of the virus.

So far no British personnel have been affected. One American sergeant who took part in a horse show in the British Sector on Sunday, Sept. 21, died of poliomyelitis on the following Tuesday.

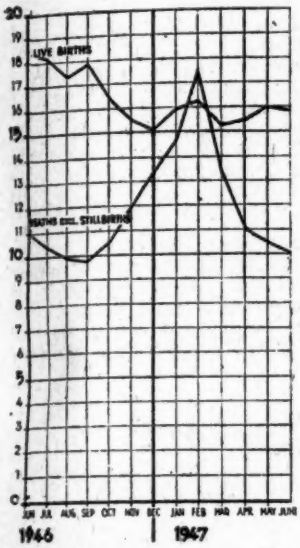
In the British Zone of Germany up to Sept. 6 there had been 651 cases of poliomyelitis and 76 deaths, distributed as shown in the table among a population of 22,324,600.

	Cases	Deaths
Schleswig-Holstein	132	23
Niedersachsen	263	30
"Northrhine" Westphalia	159	16
Hamburg	97	7
Total	651	76

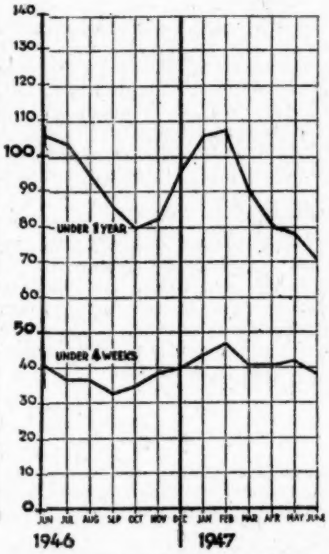
In the U.S. Zone and the U.S. Sector of Berlin from July 12 to Aug. 30 there were a total of 222 cases and 22 deaths, the highest figures being those for the week ending Aug. 30, when there were 71 cases and 11 deaths.

Births and Deaths in Germany

We print below, from the August Monthly Report of the Control Commission for Germany, two graphs showing the fluctuations in live births, deaths, and infant mortality in the British Zone of Germany, excluding the British Sector of Berlin, from June, 1946, to June, 1947.



Birth and death rates per 1,000 population per year.



Infant mortality per 1,000 live births.

Discussion of Table

In *England and Wales* infectious diseases were more prevalent than in the preceding week. Rises in incidence were recorded for scarlet fever 131, acute pneumonia 49, dysentery 31, measles 28, diphtheria 27, cerebrospinal fever 10, and paratyphoid fever 9. Only whooping-cough 141 showed a decreased incidence.

The incidence of scarlet fever has been increasing steadily during the past four weeks; an increase of 85% in the number of notifications occurred during the month. During the week under review the rate of increase was fairly uniform in the various regions of the country.

The only large variation in the local trends of diphtheria was an increase of 15 in Lancashire due to the experience of the county boroughs. Notifications of whooping-cough declined in most areas; the largest fall was 61 in Essex. Little change occurred in the local trends of measles, apart from a rise of 42 in Somersetshire.

New outbreaks of dysentery were reported from Devonshire, St. Thomas R.D. 11, and Cornwall, Bodmin M.B. 8. The other large centres of dysentery were London 18 and Lancashire 12.

In *Scotland* only small changes were recorded in the incidence of infectious diseases. Decreases were reported for whooping-cough 29, scarlet fever 15, cerebrospinal fever 9, and acute poliomyelitis 7, while an increase of 8 was recorded in the notifications of dysentery—due to an outbreak affecting 10 persons in the city of Dundee. An increase in the notifications of poliomyelitis occurred in the eastern area, where the cases rose from 18 to 31.

In *Eire* infectious diseases were less prevalent and falls were recorded for whooping-cough 27, diarrhoea and enteritis 28, and measles 29.

In *Northern Ireland* the only change of note in the trends of infectious diseases was an increase of 16 in the notifications of scarlet fever due to a small general rise.

Health of Scotland

The Department of Health for Scotland in its first full report since before the war has reviewed the period from July, 1945, to December, 1946. In 1946 the birth rate was 20.3 per 1,000, the highest rate since 1926. The infant mortality rate was 53.8 per 1,000 live births, the lowest on record, while the maternal mortality), 2.2 per 1,000 total births, was also the lowest rate ever recorded. Notifications of diphtheria declined from 12,391 in 1941 to 4,988 in 1946. Deaths from pulmonary tuberculosis numbered 2,932 in 1945 and 3,226 in 1946. Deaths from non-pulmonary tuberculosis totalled 871 in 1945 and 757 in 1946. The number of new cases of venereal disease in 1945 was 10,051, compared with 13,651 and 10,651 in 1943 and 1944; the figures for 1946 show a substantial rise.

Quarterly Returns for England and Wales

The birth rate during the June quarter was 22.0 per 1,000, compared with 22.8 for the preceding quarter and 16.6 for the average of the second quarters for the five years 1941–5. The infant mortality rate was 40 per 1,000 live births and was 9 below the average rate for the June quarters of the preceding ten years. The general death rate was 11.1, compared with 10.7 for the preceding second quarter and 11.3 for the average of 1941–5. During the quarter 60 cases of smallpox were notified, and 8 deaths were attributed to this cause.

Week Ending September 27

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 880, whooping-cough 1,105, diphtheria 184, measles 1,139, acute pneumonia 257, cerebrospinal fever 30, acute poliomyelitis 441, acute polio-encephalitis 32, dysentery 87, paratyphoid 10, and typhoid 22.

Medical News

Register of Chiropodists

A new *Register of Chiropodists* has been published by the Board of Registration of Medical Auxiliaries, and medical practitioners can obtain copies free on application to the Registrar of the Board at Tavistock House (North), Tavistock Square, London, W.C.1.

Van Meter Prize

The American Association for the Study of Goiter again offers the Van Meter Prize Award of three hundred dollars and two honourable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The Award will be made at the annual meeting of the Association, which will be held at King Edward Hotel, Toronto, Canada, May 6–8, 1948, providing essays of sufficient merit are presented in competition. The competing essays may cover either clinical or research investigations; should not exceed 3,000 words in length; must be presented in English; and a typewritten double-spaced copy be sent to the corresponding secretary, Dr. T. C. Davison, 207, Doctors' Building, Atlanta, 3, Georgia, not later than Feb. 1, 1948.

March of Doctors

"Your Doctors To-day," the new March of Time film which began its West End run at a Leicester Square cinema last week, is a survey of recent discoveries in the field of medicine and surgery. The camera moved briskly from Prof. Henry C. Sherman carrying on nutritional experiments at Columbia University to Dr. V. G. Korenchevsky at Oxford. The use of the artificial kidney is shown and so is the application of radio-iodine in the treatment of cancer of the thyroid. Lord Horder appears in an introductory shot which leads on to some of the rehabilitation work being done at Roffey Park. Some features of modern psycho-analysis are dramatically depicted, and there are many other points in this film which will interest most doctors. They may become a little wistful, however, on seeing great quantities of streptomycin displayed in an American chemist's shop. The commentary is spoken in English by Alistair Cooke.

Neurology Research Grant

The Burden Neurological Institute at Bristol has been granted £12,500 by the Rockefeller Foundation for the purpose of research in neurophysiology and neurosurgery.

Eire Medical Grants Doubled

The existing Eire Government grant of £5,000 a year to the Medical Research Council of Ireland has now been doubled, as has the usual £3,000 annual grant for research into the treatment of tuberculosis. These grants are guaranteed for five years and are likely to be renewed afterwards. The sums will enable research workers to be adequately remunerated, essential apparatus to be procured, and accommodation at medical schools, hospitals, and universities to be improved.

Private Secretary to Minister of Health

The Minister of Health, the Rt. Hon. Aneurin Bevan, M.P., has appointed Mr. E. J. S. Clarke to be his private secretary.

Christmas Cards

The Grenfell Association of Great Britain and Ireland, which carries out medical work among settlers in Labrador and Northern Newfoundland, has produced a delightful range of Christmas cards at a reasonable price. They are obtainable at prices ranging from 5d. in black and white to 1s. in colour, envelopes included, postcards in black and white at 2d. each, and six reproductions of seascapes at 2s. a packet. An illustrated leaflet can be supplied for 1d. They may be obtained from the Secretary, The Grenfell Association, 66, Victoria Street, London, S.W. For the philatelist packets of stamps (no duplicates) are available containing 18 British Commonwealth for 1s. 6d. or 7 mint U.S.A. for 1s. Orders should be sent to Mrs. D. W. Mackay, 88, Exeter House, Putney Heath, S.W.15. The Grenfell Mission is still in desperate need of funds if it is to continue the only medical and social service that exists in these snowy outposts, and we take this opportunity of drawing the attention of our readers to these cards.

Summer Schools in Health Education

Two Summer Schools in Health Education were held this year by the Central Council for Health Education under the direction of Dr. Robert Sutherland, assisted by Dr. N. Parfit, Miss P. M. Taylor, and Mrs. K. M. Catlin. Of every seven students attending the schools one was a medical practitioner or medical student, two were nurses, two were teachers, and two were social or health education workers. The students came from Great Britain, Eire, India, Belgium, Czechoslovakia, Denmark, Portugal, and Sweden. The school at Keble College, Oxford, was held from July 25 to Aug. 8, and that at Bede College, Durham, from Aug. 20 to Sept. 3. Lectures on general background studies were given in the mornings at each school by four lecturers working as a team. At Oxford Prof. H. P. Gilding spoke on "The Physiology of Growth," Prof. C. W. Valentine on "Psychology," Dr. Maurice Mitman on "The Biology of Infection," and Dr. Robert Sutherland on "Social Factors Affecting Health." At Durham these lectures were given by Dr. T. E. Barlow, Miss Anna Freud, Dr. Robert Cruickshank, and Mr. Leonard England respectively. Evening lectures, given by speakers prominent in the fields of medicine, education, or industry, covered the wider aspects of health education in the field. Discussion groups were led by the students, speaking in the first week to small groups representing a cross-section of the school and later to their own professional groups. Tuition in physical recreation and ballroom dancing, under expert leadership, was much appreciated, as were opportunities for taking part in local expeditions, tennis, swimming, and other sports. Civic welcomes were much appreciated and enjoyed. At both Oxford and Durham the Mayor and Mayoress entertained the students.

Wills

Dr. John Brook Henderson Holroyd, of Sheffield, who died on Feb. 8, left £2,839. Dr. John Dewar Robson, of Dumfries, who died on April 26 last, left £3,773. Dr. Kenneth Robert Hay, O.B.E., of London, W.14, who died on March 12, left £48,221, and he bequeathed £300 to St. Bartholomew's and £250 to the Royal Medical Benevolent Fund.

COMING EVENTS

National Institute for the Deaf

The annual general meeting of the National Institute for the Deaf will be held at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C., to-day (Friday, Oct. 10), at 2.30 p.m., when the Duke of Montrose will preside.

Zoological Society

The next meeting of the Zoological Society of London for scientific business will be held on Tuesday, Oct. 14, at 5 p.m.

Edinburgh Clinical Club

The first meeting of the 1947–8 session of the Edinburgh Clinical Club will be held at B.M.A. House, 7, Drumsheugh Gardens, Edinburgh, on Thursday, Oct. 16, at 8 p.m., when Dr. J. D. S. Cameron will open a discussion on "Modern Drugs in General Practice."

Institute of Public Administration

Mr. L. John Edwards, M.P., Parliamentary Secretary to the Ministry of Health, will deliver the first of a series of lectures arranged by the Institute of Public Administration (18, Ashley Place, Victoria Street, London, S.W.1) at King's College, Strand, London, W.C., on Tuesday, Oct. 14, at 6 p.m. His subject is "Building a Health Service." Full particulars of the other lectures, which will be delivered on Nov. 4 and Dec. 2, 1947, and Jan. 13, Feb. 3, March 2, April 6, and May 4, 1948, can be obtained from the director of the institute. The fees for admission to the lectures are: Members, 5s., and non-members, 12s. 6d., for the whole series; individual lectures, 2s. 6d.

Royal Medical Society of Edinburgh

The Royal Medical Society of Edinburgh, which was founded in 1737, opens its 1947–8 session with an address by the Marquess of Linlithgow, Chancellor of the University of Edinburgh, on "Medical Rehabilitation" on Friday, Oct. 17, at 8 p.m. at the Society's Hall, 7, Melbourne Place, Edinburgh. Other meetings will be announced in the diary column of the *Journal* for the appropriate weeks.

Irish Tuberculosis Society

The annual general meeting of the Irish Tuberculosis Society will be held at Crooksling Sanatorium, Co. Durham, on Friday, Oct. 17, at 4.15 p.m., and will be followed by a clinical meeting at 5 p.m., when Dr. Arthur Walsh will speak on "Trends in Treatment of Pulmonary Tuberculosis in Scandinavia." At 5.30 p.m. Dr. Pearl Dunleavy will discuss "Dispensary Organization in Tuberculosis in Scandinavia," and at 6.30 p.m. Dr. Peter W. Edwards will present "Some Essential Requirements in Tuberculosis Schemes." Membership of the Society is open to all registered medical practitioners at an annual subscription of 10s. 6d. The address of the honorary secretary is the Hospital, Newcastle, Co. Wicklow, Eire.

Prevention of Blindness

The National Society for the Prevention of Blindness announces that a three-day conference will be held at Hotel Radisson, Minneapolis, Minn., U.S.A., on April 5, 6, and 7, 1948. The conference will be of interest to persons who are directly or indirectly concerned with eye health and safety. Details concerning the programme may be obtained from the society at 1790, Broadway, New York 19, N.Y., U.S.A.

SOCIETIES AND LECTURES

Royal College of Physicians of London, Pall Mall East, S.W.—Saturday, Oct. 18, 3 p.m. Harveian Oration by Dr. C. E. Lakin: Our Founders and Benefactors.

Royal College of Surgeons of England, Lincoln's Inn Fields, W.C.—Thursday, Oct. 16, 3.45 p.m., Surgery Lecture by Prof. John H. Garlock, Surgical Treatment of Carcinoma of the Oesophagus and Upper Stomach; Friday, Oct. 17, 5 p.m., Hunterian Lecture by Prof. Murray A. Falconer, A Study of Principles and Results of Lumbar Intervertebral Disk Surgery.

Royal Society of Medicine

Section of Psychiatry.—Tuesday, Oct. 14, 5 p.m. Presidential Address by Sir David Henderson: Psychiatric Hypothesis and Practice.

Section of Comparative Medicine.—Wednesday, Oct. 15, 5 p.m. Presidential Address by Mr. R. E. Glover: The Influence of the Small Animal Breeder on Biological Research.

Section of Dermatology.—Thursday, Oct. 16, 5 p.m. (Cases at 4 p.m.)

Section of Obstetrics.—Friday, Oct. 17, 8 p.m. Discussion: Post-operative Thrombosis. Openers: Drs. Helen P. Wright and Magnus Haines, and Messrs. A. Dickson Wright and Leslie Williams.

Section of Radiology.—Friday, Oct. 17, 8 p.m. Paper by Dr. R. G. Reid: Inter-atrial Septal Defect—A Radiological Study of Recent Cases.

British Institute of Philosophy.—At University Hall, 14, Gordon Square, London, W.C., Friday, Oct. 17, 5.15 p.m. Mr. H. D. Lewis: Religion and Morality.

London: University College, Gower Street, W.C.—Tuesday, Oct. 14, 5.15 p.m. Prof. J. Z. Young, F.R.S.: Structure of Peripheral Nerve and of Nerve Endings. Wednesday, Oct. 15, 5 p.m. Dr. M. H. Pirenne: Physiological Mechanisms of Vision.

Medical Society of London, 11, Chandos Street, W.—Monday, Oct. 13, 8 p.m., General Meeting; 8.30 p.m., Pathological Meeting.

Royal Institute of Public Health and Hygiene, 28, Portland Place, W.—Wednesday, Oct. 15, 3.30 p.m. Prof. H. J. Seddon: Infantile Paralysis (Illustrated).

Royal Society of Tropical Medicine and Hygiene.—At 26 Portland Place, W., Thursday, Oct. 16, 7.30 p.m., Presidential Address by Sir Philip Manson-Bahr: The Practice of Tropical Medicine in London.

POSTGRADUATE DIARY

EDINBURGH POSTGRADUATE BOARD FOR MEDICINE.—At West Medical Lecture Theatre, Edinburgh Royal Infirmary, Tuesday, Oct. 14, 5 p.m. Dr. R. McWhirter: Living Crystals.

EDINBURGH ROYAL INFIRMARY.—Thursday, Oct. 16, 4.30 p.m. Honyman Gillespie Lecture by Dr. A. S. Paterson: Electro-shock and Electronarcosis in the Treatment of Mental Disorders.

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—Wednesday, Oct. 15, 8 p.m. Prof. A. J. Ballantyne: Some Problems in Ophthalmoscopic Diagnosis.

LONDON CHEST HOSPITAL, Victoria Park, E.—Friday, Oct. 17, 5 p.m. Mr. T. Holmes Sellors: Surgery of the Heart and Pericardium.

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street, Leicester Square, W.C.—Tuesday, Oct. 14, 5 p.m. Dr. I. Muende, Pathological Demonstrations.

The Edinburgh Postgraduate Board for Medicine has arranged, in connexion with the postgraduate courses in medicine and surgery, a series of open lectures on subjects of wide biological interest to be given in the West Medical Lecture Theatre of the Royal Infirmary on alternate Tuesdays from Oct. 14 to Dec. 9, at 5 p.m. All graduates and students are invited to attend the lectures, details of which will appear in the diary column of the *Journal* for the appropriate weeks.

The Fellowship of Medicine announces the following courses: (1) Obstetrics and gynaecology, at Nuffield Department of Obstetrics and Gynaecology, Radcliffe Infirmary, Oxford, all day from Oct. 21 to 31. (2) Week-end course in rheumatic diseases, at Rheumatic Unit, St. Stephen's Hospital, Fulham Road, S.W., all day Saturday and Sunday, Oct. 25 and 26. (3) Week-end course in general medicine and surgery, all day Saturday and Sunday, Oct. 18 and 19. (4) Course in proctology, at St. Mark's Hospital, City Road, E.C., all day, Oct. 27 to Nov. 1. Full particulars can be obtained from the Fellowship of Medicine, 1, Wimpole Street, London, W.

An additional clinico-pathological meeting will be held on Monday, Oct. 20, at 5 p.m., in the Meyerstein Lecture Theatre, Westminster Hospital School of Medicine, Horseferry Road, S.W., when a sound film on the detection of unsuspected tuberculosis in hospital out-patients (running time 20 minutes) will be shown and generalized amyloidosis in pulmonary tuberculosis discussed.

A concentrated week-end course on the chronic rheumatic diseases for general practitioners and demobilized officers will be inaugurated by Lord Moran, P.R.C.P., at the L.C.C. Rheumatism Unit, St. Stephen's Hospital, Fulham Road, S.W., on Saturday, Oct. 25. Full details of the course can be obtained on application to the Fellowship of Postgraduate Medicine, 1, Wimpole Street, London, W.1.

APPOINTMENTS

Kenneth Cowan, M.D., D.P.H., has been appointed Senior Administrative Medical Officer to the South-West Metropolitan Regional Hospital Board.

Dr. Cowan has been medical officer of health and school medical officer for Gloucestershire for the past ten years and was formerly deputy medical officer of health for Leicestershire.

KENT AND SUSSEX HOSPITAL.—*Honorary Assistant Physician:* P. T. Cooper, M.B.E., M.D., M.R.C.P. *Honorary Anaesthetist:* G. P. Goodwin, M.R.C.S., L.R.C.P., D.A.

MACPHERSON, IAN, M.D., M.R.C.P., Honorary Physician, Leeds Public Dispensary and Hospital.

MILLER, C. M., M.D., M.R.C.P., Assistant Physician, Smithdown Road Hospital, Liverpool.

BIRTHS, MARRIAGES, AND DEATHS

The charge for an insertion under this head is 10s. 6d. for 18 words or less. Extra words 3s. 6d. for each six or less. Payment should be forwarded with the notice, authenticated by the name and permanent address of the sender, and should reach the Advertisement Manager not later than first post Monday morning.

BIRTHS

ADAM.—On Sept. 18, 1947, to Dr. and Mrs. R. H. Adam, 71, Busby Road, Clarkston, Renfrewshire, a daughter.

CHADWICK.—On Aug. 31, 1947, at Manchester, to Sybil (*née* Kinsey Williams), wife of Lieut. D. A. Chadwick, R.A.M.C., a daughter—Jacqueline Anne.

FERREIRA.—On Oct. 3, 1947, at the Wimbledon Nursing Home, to Joan (*née* Hilditch), wife of Dr. Harold Ferreira of 22A, Arterberry Road, Wimbledon, a son.

HEAP.—On Oct. 1, 1947, at Scarborough, to Berry (*née* Heather), wife of Dr. K. I. Heap, "One Oak," Pickering, Yorks, a daughter.

NEAL SMITH.—On Oct. 1, 1947, at Queen Charlotte's Hospital, to Joan, wife of D. J. Neal Smith, M.D., M.R.C.O.G., a daughter—Susan.

SUMNER.—On Sept. 22, 1947, at Newcastle General Hospital, to Audrey (*née* Hutchison), wife of Dr. John Sumner, M.C., M.D., a son—Jeremy Hutchison.

WOODS.—On Sept. 19, 1947, in Dublin, to Valerie, wife of Dr. F. B. B. Woods, a son.

MARRIAGE

HARVEY—WOODWARD.—On Sept. 27, 1947, at St. Peter's, Littleover, Norman William Allan Harvey, M.B., B.S., to Betty Woodward.

DEATHS

DICKSON.—On Sept. 17, 1947, at 95, Rose Hill, Oxford, Francis Henry Dickson, M.B., Ch.B.(Edin.), aged 67.

STROVER.—On Sept. 27, 1947, at 90, Redland Road, Bristol, Henry William Martyn, O.B.E., M.B., Ch.B., aged 71.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Abdominal Actinomycosis

Q.—*A patient with caecal and hepatic actinomycosis has had intensive treatment with penicillin, sulphonamides, and iodides for three months; her sinuses have now healed and she is afebrile, but there is still induration in the right loin. How long should treatment be continued? What is the probability of relapse? Is the condition still considered invariably fatal when the above remedies are used?*

A.—The advent of penicillin has entirely altered the outlook and prognosis in abdominal actinomycosis: the condition is now much more amenable to treatment and cure. It is, however, necessary to give large doses of penicillin for long periods without intermission—half a million units daily until all evidence of the disease has disappeared. The induration in the loin should serve as a warning that recurrence will take place unless the penicillin treatment is continued. The drug need not be given in frequent small doses; one daily dose of half a million units will serve. It can be given in small bulk, and will not cause discomfort if a few drops of local anaesthetic are added to it. In this case skiagrams of the hepatic region should be taken to see if there is any enlargement of the liver upwards: rupture of a hepatic abscess into the lung sometimes occurs, and this would modify the prognosis.

Syphilitic Aortitis

Q.—*Is it correct that in syphilitic aortitis good results have been obtained with penicillin preceded by a course of bismuth? If so, would you give me details of dosage, duration, etc. I believe there is a danger of a Herxheimer reaction in these cases. What precautions should be taken to prevent this, and, should it occur, what would be the immediate treatment?*

A.—Yes, bismuth and penicillin are indicated, but too much must not be expected in the way of results. First a course of intramuscular injections of an insoluble bismuth preparation should be given, starting with 0.05 g. of bismuth metal and increasing gradually to 0.2 g.; injections should be given every five to seven days; at the same time large doses of potassium iodide should be prescribed up to the limit of tolerance. At the end of three months penicillin may be employed, in small doses at first; for example, 5,000 units three-hourly, increasing gradually to 20,000 units; the total dosage should be 4 mega units if no untoward reactions occur. A severe Herxheimer reaction might be very dangerous; it can be prevented by using mild therapeutic measures at first. Should such a reaction occur symptomatic treatment is indicated.

Correction of Presbyopia

Q.—*In the treatment of presbyopia where it may be necessary to incorporate prisms in the lenses to relieve the internal recti—as in instances where the near point has to be brought closer than is ordinarily desirable—it is said that the prisms should be of a strength to bring the near point of convergence to that of accommodation, and that the strength of the prisms normally corresponds to that of the sphere required. By "sphere required" I presume is meant the presbyopic correction. Is this so? Also, should the strength of the prism before* each *eye be that of the sphere, or should a prism the strength of the sphere be divided between the two eyes?*

A.—In tasks performed closer to the eyes than that of reading, the use of prisms together with spheres stronger than those required for reading is of definite advantage. In such cases the prism should be equally divided between the two eyes. Tables have been compiled and were printed before the war showing the sphere and prism to be added to the distance correction for varying distances at the ages of 40, 45, 55, and 65

and taking into consideration the interpupillary measurement. Such tables form a useful basis for prescribing, but in every case the problem must be considered on its own merits and no hard-and-fast rule connecting sphere and prism should be slavishly followed.

Food Allergy

Q.—*An infant of 13 months who had a very severe attack of gastro-enteritis just after birth suffers from extreme collapse followed by vomiting and diarrhoea almost immediately after being given egg, even in minute amounts; the attack lasts about eighteen hours. On several occasions, unrelated to any specific food, he has had a cutaneous eruption similar to lichen urticatus; otherwise he is perfectly healthy. How should he be treated? Is there any danger in immunizing against diphtheria and/or pertussis, and what preparation should be used?*

A.—Symptomatically, elixir "benadryl," 0.5 to 2 mg. per lb. body weight daily, divided into four doses, is likely to help the irritation. Thermal factors, environmental factors, and food allergy all play a part in this disorder. Investigation is by trial dieting, eliminating and later reintroducing suspected foods, as skin tests in this condition are not reliable. Treatment consists in elimination of any proved food allergen. Immunization of an allergic child with diphtheria toxoid and pertussis vaccine is without risk.

Small Stature

Q.—*Can anything be done about a girl aged 17, just over 5 feet (152 cm.) in height, who appears to have stopped growing? She is at school and her general health is good. Both sides of the family are above average height.*

A.—In most girls the epiphyses are united at the age of 17, and in many at the age of 15. Growth is therefore unlikely in this case under any treatment. The usual treatment when the epiphyses are ununited—as can, of course, be seen by *x* rays—is by thyroid extract and injections of anterior pituitary growth hormone. On the whole the latter is clinically disappointing and does not fulfil the high expectations of animal experiments.

Diaphragm Pessary

Q.—*When fitting a diaphragm pessary how is the size required by a particular patient decided? How often is it advisable to check the fitting—with special reference to a patient who has had a child (by normal delivery) two months ago?*

A.—It is customary to choose the largest diaphragm pessary which will reach from the posterior fornix into the small sulcus behind the pubic bone. It should fit tightly but stay up when the patient bears down. By no means all women can wear this type, and a sloping anterior vaginal wall is a frequent contra-indication. A "Dumas" type of pessary is then required. Relevant information will be found in the article on contraception in Butterworth's *Encyclopaedia of General Medicine*. The woman could be fitted in the puerperium, but it is often advisable to refit after three or four months, or when the baby is weaned.

Enteritis and Steatorrhoea

Q.—*For some years a patient has had alternating attacks of diarrhoea and constipation, diagnosed as intestinal carbohydrate dyspepsia. Two months ago there was an attack of acute enteritis with pale, fatty, liquid stools. Improvement has taken place on a fat-free diet, but the stools remain pale and he has lost weight. He has previously been treated with arsenic for the control of a long-standing dermatitis herpetiformis. Has this any bearing on the present condition? What treatment should be prescribed?*

A.—It is not rare for an attack of acute enteritis to be followed by a period of steatorrhoea. This seldom lasts more than a few weeks, and in most instances the bowel habit and the character of the stools rapidly return to normal. The cause of this transient defect in fat absorption is unknown, but it is noteworthy that tropical sprue may be a sequel of the acute enteritis known as hill diarrhoea. It has been suggested that changes in the flora of the bowel may be responsible for these attacks.

While steatorrhoea continues, it is wise to restrict fat. Symptomatic improvement has followed nicotinic acid (50 mg. four times daily), and folic acid (20 mg. daily) is worth a trial. In sprue neither of these substances causes a significant increase in the absorption of fat, but this has been noted after full doses of yeast extract. It is improbable that arsenic plays any part in the causation of the symptoms. These therapeutic suggestions are made on the assumption that organic disease of the bowel has been excluded.

Treatment of Obesity

Q.—*Do you consider ammonium chloride a better treatment for obesity than thyroid?*

A.—These substances act quite differently. Ammonium chloride is a diuretic and is given because adiposity is often associated with some element of water retention; and also because low-calorie diets are effective up to a certain point, when the weight becomes stationary and no further progress is made until diuretics are given to remove an accumulated retention of fluid. Thyroid acts by increasing the metabolic rate, but as its main effect is on protein its use is not logical in the absence of evidence of associated thyroid deficiency. It is dangerous in larger doses where fatty infiltration of the heart is suspected. In moderate doses it is used as an adjunct to therapy even in the absence of a lowered basal metabolism, and it may be of some help as an auxiliary method of treatment.

Tobacco and Poliomyelitis

Q.—*Is there any evidence that non-smokers are more susceptible to poliomyelitis than smokers? Children are non-smokers and are very susceptible.*

A.—A very large number of possible factors influencing susceptibility to the virus of poliomyelitis have been studied in the U.S.A. and other countries where the disease is endemic and there have been many epidemics. It is unlikely that if tobacco smokers were less susceptible to poliomyelitis virus than non-smokers (other than children) it would have gone unnoticed.

NOTES AND COMMENTS

Angina Pectoris.—Dr. C. W. F. McKean (London, W.1) writes: Your questioner (Sept. 13, p. 439) should be reminded to do a W.R. on his patient, as the atypical angina pectoris he describes—substernal pain radiating to the arm, but less severe and of longer duration than true angina of effort—in the absence of hypertension, arteriosclerosis, or valvular disease, is one of the ways in which specific aortitis may present itself.

Funds for X-ray Plant.—As a result of an appeal for funds (Sept. 20, p. 476) to provide an *x*-ray plant for the London Missionary Society £54 15s. has been subscribed. The Victoria Hospital, Kingston-on-Thames, kindly provided an *x*-ray diagnostic unit, and another £250 is still required to meet the cost of overhauling the unit and its transport to India. Contributions would be gratefully received by Dr. Cecil Cutting, London Missionary Society, 42, Broadway, London, S.W.1.

Corrections

It was Prof. Lambert Rogers who introduced Dr. Alfred Blalock, professor of surgery at Johns Hopkins University, Baltimore, for admission to the Honorary Fellowship of the Royal College of Surgeons of England, and *not* Prof. H. W. Rodgers as reported in the *Journal* of Sept. 27 (p. 505).

A small, but vital, printer's error crept into the summary of Dr. J. McWhirter's paper on carcinoma of the breast (*Journal*, Oct. 4). At p. 542, column 2, line 18, "the first-year" should read "the five-year survival rate was 50.1%."

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